STEEL
The Weekly Magazine of Metalworking

VOL. 128 NO. 7 FEBRUARY 12, 1951

THIS WEEK IN METALWORKING

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Editorial and Business Staff—Page 10. Advertising Index—Page 148. Editorial index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

***Next Week*... Training Manpower for Defense Jobs... Continuous Electroplating Effects Operational Economy... How to Set Up a Successful Equipment Replacement Program... Good Fixtures a Must for Interchangeable Machined Parts**

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $18. Single copies (current issues) 35 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1951 by Penton Publishing Co.

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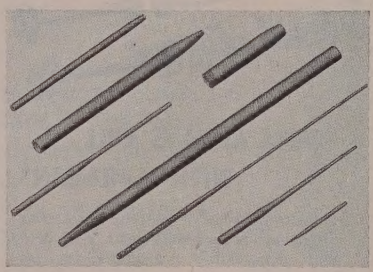

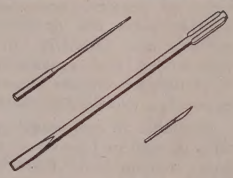

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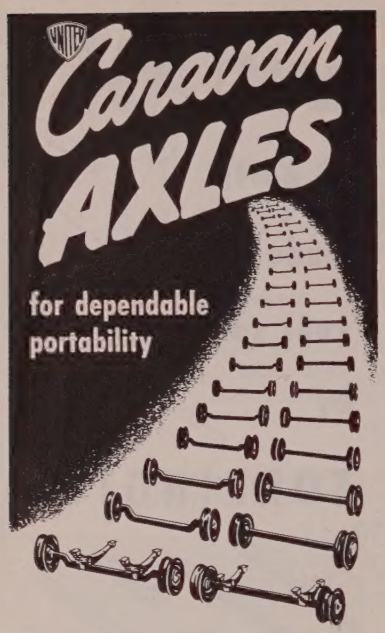

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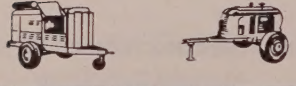

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Behind the Scenes...

Polinidal Sinus

Cartoonist Pat Dwyer Jr., who is also our poet laureate, wrote these lines while standing up during an enforced vacation in the hospital:

Gather 'round ye minstrels . . . aye, gather 'round and wail,
And listen while I tell you this tender, trembling tale.
I use the term advisedly; my tail is tender, true:
Macabre in their humor, they even stained it blue.
"Behold," the doctors chorused, "the lump, it should be minus!
"A doleful cyst is what it is: A Polinidal Sinus!"

Space limitations and the postal regulations force us to skip the graphic description of the operation. Our poet ends his epic on a note of supplication:

Beneath the pads, beneath the wads, the raging wound is healing;
Through my buttocks and my back I sense a surge of feeling.
"Dear Lord," we cry, "if once again You feel You must confine us,
"Do as Thou wilt, of course, but please . . . no Polinidal Sinus!"

Authority

Geraldine, a cleaning woman in our building, our night editor and an avid reader of the industrial press, reports that STEEL's Chicago Editor Erle Ross has made *The Chicago Purchaser* with a four-page article on steel procurement.

Erle's article appears in the January, 1951, issue of that publication put out by the Purchasing Agents Association of Chicago. He outlines the steel buying problems in that area just as he does every week for you.

Little Shavers

Miscellaneous intelligence: 30 per cent of men under 20 who shave use electric razors. In 1940, 43 million men 15 years and older made up the shaving population. In 1950 the shavers increased to 54 million. About 1.5 million men become of "shaving age" each year.

Deductions

One of STEEL's newest subscribers is Oak Ridge Institute of Nuclear Studies. The group signed up for only one year. We're trying to deduce what that means: Does Oak Ridge expect that the crisis will be over in a year or that we'll be blow to smithereens in a year?

Another new subscriber sent us check for $10.40 although the year rate is $10. He's probably taking in account a 4 per cent inflation sin last summer.

Versatile

Good advice, education, entertai ment—ads in STEEL give you th trio each week. American Optic Co., on page 133, advises how to avo eye injury. We learned how Chris endom was saved by steel fro Youngstown Sheet & Tube Co. page 23. We got a belt, as we every time one appears, out of Ha lon-Gregory Galvanizing Co.'s ca toon on page 106.

Puzzle Corner

In the problem of Jan. 29 about t broken rock, the weights of the piec are 1, 3, 9 and 27 pounds. First with the correct answer was T. Bean of Barber & Ross Co.

Jack Doxsey of Hill & Knowlt of Cleveland submits this puzzle:

In Rifle Row live five officers. Th are a brigadier, a colonel, a maj a captain, and a lieutenant. Th names, not necessarily respective are Grenade, Howitzer, Mustardg Verylight, and Tank.

Each officer has one and only c sister and each is married to a sist of one of the other officers.

The following particulars are ava able:

1. One at least of the brothers-law of Mustardgas is superior in ra to Mustardgas.

2. The Captain did not serve Gallipoli.

3. Both brothers-in-law of Howit served in France, as have bo brothers-in-law of Tank, but neith brother-in-law of the Brigadier.

4. Tank has served in Palestine have both his brothers-in-law, a the Lieutenant has not.

5. The Colonel has served in Chi as have both his brothers-in-law.

6. Tank has served in China, as h only one of his brothers-in-law. T Brigadier has not served in Chi but has served with both his brothe in-law at Gallipoli.

7. Verylight has not served eith in Gallipoli or in Palestine.

What is the name and rank of ea of the five officers?

Shrdlu

The Metalworking Outlook

Wage Freeze Problem: Escalator Clauses

Federal wage stabilizers may stumble on the "escalator clause" in March. Then, their stabilization policy could trip when many General Motors-type cost-of-living contracts come up for review. About 1 million workers are covered in a formula that will call for automatic pay boosts of 4 to 6 cents an hour because of cost-of-living increases. The labor-sympathizing administration has this choice: Allow the automatic increases despite wage stabilization and try to patch the damage that results; or, refuse the boosts, disrupt the labor-management accord in the crucial auto industry and bear the wrath of the CIO.

How the U.S. Will "Solve" It

A good bet: The administration will take the former course. Watch for a "compromise" along lines advocated by the Political Action Committee of the CIO. It favors the same standard set up for cost-of-living advances as for general raises—a limit on escalator boosts so that total wages won't go more than 10 per cent above the level of last June. The CIO wants the same deal on pension payments and other items.

Chain Reaction in Prices

The damage to the price line cause by wage concessions will be terrific. Beginning this spring will come a long series of price concessions, too. They'll probably arrive piecemeal, then will start all over when the next quarterly wage adjustment is granted. Then . . . but why repeat?

Inventory Edicts Bring Gripes

National Production Authority may set up an Inventory Appeals Board to cope with the rising tide of complaints about inventory restrictions stipulated in NPA Regulation 1 as amended and supplemented. The Iron & Steel Division is bearing the brunt of those gripes.

NPA Under Fire

Look for other changes in the NPA setup. The agency got a thorough drubbing in a report on its effectiveness by the Senate Small Business Committee. The report cites NPA for its "lack of knowledge and experience of the broad problems of World War II mobilization techniques." It also says NPA "has shown a lack of both energy and imagination in getting its program across to the business community."

Fewer Autos by April

Expect a voluntary agreement by auto makers to curb assemblies by 20 per cent as of Apr. 1. The cutbacks will be even sharper later. The reason: Assemblers are using 20 or 30 per

uction-Engineering News—p. 71 *The Market Outlook—p. 117*

cent less aluminum and copper as they promised, but the nonferrous shortage is not curtailing auto production and steel consumption as much as expected because industry engineers are developing good substitutes. Detroit hopes a voluntary agreement will forestall mandatory federal action.

Reserve Plants Activated?

Hint that the real flood of defense orders will be breaking by spring: Washington is rushing inspections of reserve plants. About 500 plants are under government control, with 253 in reserve or on a standby basis. Defense procurement for this and the next, 1952, fiscal year will total about $87 billion over and above housekeeping expenses such as personnel costs of the armed forces.

Negotiations in New England

An established steel company will probably operate the New England steel mill to be built in the New London, Conn., area. Three firms are reportedly considering the job. Bethlehem Steel Co. is aiding in the study of the economics of the project. Its management of the proposed facility would tie in with its other seaboard activities . . . Purchase of Worth Steel Co. at Claymont, Del., by Colorado Fuel & Iron Corp. is expected to lead eventually to the erection of another blast furnace and more coke ovens along the Delaware river (p. 54).

Signs of the Times

Story told by purchasing agents: Steel is getting so tight that you have to show your DO number to the gray market operators . . . Some 6500 will be employed eventually by the U. S. to man a Controlled Materials Plan; about 1100 are available to work on CMP now (p. 45) . . . Army ordnance will purchase 75,000 pounds of titanium metal products from Titanium Metals Corp. of America . . . The Air Force publicity men have instructions to give out no data on total AF purchasing; one reason: Total procurement information may blast prices upward; among other things, the prohibition reveals the Defense Department's confidence in ESA's ability to hold the price line.

What Industry Is Doing

Some 55,000 subcontracting and supplying chances have developed or soon will in the aircraft program (p. 43) . . . Iron and steel scrap yards are bare (p. 48) . . . The U. S. will aid machine tool builders (p. 48) . . . All military items will be free from the price freeze until Apr. 1 (p. 49) . . . Inventors are fighting government confiscation of their defense ideas (p. 50) . . . A union co-rule plan adopted in West German steel and coal industries is a big step toward socialism (p. 53), nearly as far-reaching as nationalization of British steel scheduled to take effect Feb. 15 . . . The rail strike dropped STEEL's production index 9 points to 211 (p. 61).

A Great Asset

During the decade of the fifties there will be an opportunity to compare on a broader scale than heretofore the results of operating industry by private owners or by the state.

In the United States, Canada and a few other nations steel facilities are operated chiefly by private companies. In Russia and in most of her satellite nations steel properties are owned by the state. State-owned blast furnaces and steel plants are scattered throughout other countries in both hemispheres. Beginning on Thursday of this week about 55 per cent of Britain's iron and steel facilities, which has been privately owned, will pass into public ownership.

Thus for the first time the iron and steel industry of the United States and Canada will be pitted against foreign contemporaries which for the most part are under the direction of their governments. This competition comes at a time when demand for steel exceeds supply in almost every steelmaking area in the world. Therefore one of the first tests to be met by the privately and publicly owned steel companies will be ability to provide more capacity intelligently. That means arranging for expansion in the proper volume, in the right places and at the right times.

On this single test it is difficult to believe that the state-owned steel industries can even remotely approach the ability of the privately owned units. With few exceptions, experience has shown that private management is more intelligent in the use of stockholders' money than public officials are in the use of the people's money. In this country every privately owned public utility runs rings around its municipally owned competitor.

Already the private American steel companies are giving the world's state-owned steel units something to shoot at. Today our annual steel ingot capacity is 104,229,650 tons. By the end of 1952 it will be 117.5 million tons or more. It is doubtful whether any state-owned industry will match this percentage gain with new facilities of equal quality.

Private ownership is one of our greatest national assets—to be protected at any cost.

E. C. Shaner

EDITOR-IN-CHIEF

TIMELY SAVER OF TIN: Electrolytic tinplating saved substantial amounts of tin because it enabled tin plate manufacturers to apply thinner coatings than had been possible by the dipping process. Important additional savings now are in sight as the result of a new method perfected by Weirton Steel Co. by which the coatings on either side of the plate can be varied at will.

For instance, orthodox coating of 1¼ pounds

per base box calls for the distribution of 1¼ pounds basis of tin on both sides of the plate. Under the Weirton technique one pound can be used on one side to protect the contents of the cans and a quarter pound on the other side to protect the exterior of the cans from exposure. The saving in pig tin is 50 per cent.

Weirton couldn't have picked a more auspicious time to introduce this process. It may enable the National Production Authority to modify its restrictions in the use of tin. —p. 48

* * *

GOVERNMENT FUTILITY: When you realize that the federal government has billions of your dollars to spend and much of it to waste, it is disconcerting to note how frequently it falls down on simple jobs. Friday night, Feb. 2, the Office of Price Stabilization had completed its iron and steel scrap price schedule. Government agency men, the press, scrap people and others wanted copies of the 43-page schedule immediately. The colossal government printing office said copies could not be gotten out until Tuesday, Feb. 6. Sensing the predicament, Edwin C. Barringer, Institute of Scrap Iron & Steel, obtained a copy from the board and worked his mimeographing staff all night to produce 1000 copies Saturday morning to supply the needs of government, press and industry.

The government could farm out to private industry much of the work it does inefficiently and it would be done at less cost, more speedily and accurately and the private contractors would pay taxes on their profits. —p. 50

* * *

CHRONIC INEPTITUDE: Charles E. Wilson was the logical man to speak out last Monday night in an appeal to the "sick" railroad switchmen to go back to their jobs. President Truman couldn't do it because he and his predecessor, President Roosevelt, had impaired the railroad labor act so that it was no longer workable. Secretary of Labor Tobin couldn't do it because he is too far committed to the idea that no union ever can be wrong.

Mr. Wilson could talk plainly because his job is to mobilize the nation for effective defense. He is not inhibited by political considerations. He knows that no matter how right the switchmen may be in their argument about wages, their absenteeism because of fake sickness is more damaging than anything Stalin has done or could do. The loss of productivity, time, life and money due to this "sick" stunt is appalling and it is due largely to chronic administration ineptitude. —pp. 50, 61, 117

* * *

HEADED FOR TROUBLE: Two moves toward socialism are noted in the news from Western Europe. The Labor government in Britain won out by a narrow majority of 10 in the vote on steel nationalization last Wednesday, which means 55 per cent of the British iron and steel industry will become publicly owned next Thursday.

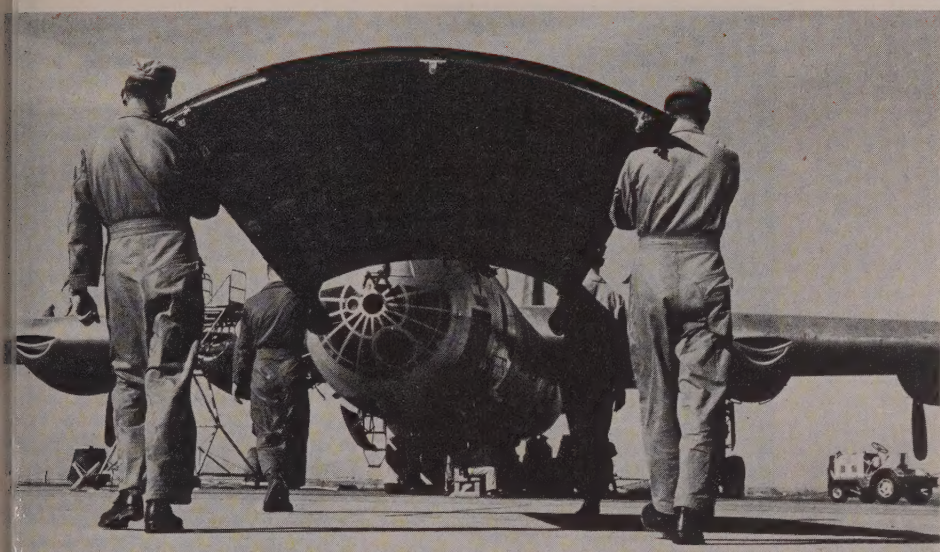
In West Germany about 80 per cent of the major coal mines and steel plants are soon to go under union-management direction. Each mine or plant will be governed by a council or board of directors consisting of five members nominated by the unions, five by stockholders and an eleventh jointly. Another odd provision in the new set-up is that the unions have the right to name the company's "social" or personnel manager.

We wonder how these schemes will be working—say one or two years from now. —p. 53

* * *

THINK ABOUT REPAIRS: White Motor Co., Cleveland, has introduced a program of mobilizing its service and parts operations to keep trucks and busses made by the company running during the emergency. The idea is to catalog pertinent information on every White vehicle now in service and to integrate a central inventory control system with all branches, distributors, dealers and service stations.

Plans of similar nature might well be considered by builders of many kinds of industrial machines and equipment. We are approaching a time when it may be necessary to get along with old facilities because replacements will not be available. This means that it will be wise for both builders and operators to be thinking ahead now of the problems of repairs, parts and service which lie ahead. A little forehandedness today will save severe headaches tomorrow. —p. 90



What's Your Part in Plane Building?

To deliver the thousands of planes the U.S. wants, the aircraft industry will become increasingly dependent upon perimeter plants—the auto producers, the tool and die shops, the metal fabricators whose products normally have nothing to do with airplanes. By late spring when the real flood of subcontracting begins, you may be as familiar with the Air Force symbol — the star and bars incorporated in the cover design—as with your own signature.

Some 55,000 subcontracting and supplying chances have developed or soon will develop as the U. S. gets set to spend $25 billion on military planes in the next 1 ½ years

PORTUNITY knocks 55,000 times the defense aircraft program.

That's the estimated number of contracting and supplying aircraft ered in the expanding aircraft n which will build up the nation's acity to produce 50,000 planes a ar. That potential will probably be ieved by mid-1953. Some of those 000 knocks have already been an- ered, but you will have time to pond to those still unsounded—if u hurry. The real flood of aircraft lers will start by late spring. Since t summer, ordering has been sub- ntial, but in spurts and starts.

Triple Threats—Aircraft, which omises to be the biggest segment the whole defense production pro- am, can help you utilize fully your acity in a controlled economy— you win the race against time, ur competitors and yourself. right-Patterson Air Force Base at yton, O., the center for aircraft ing information and procurement, l 80 appointments a day before start of the Korean war with ple interested in doing Air Force tracting. One day last month, 417 ointments were scheduled, and the rage now is well over 200 daily.

You have yourself to contend with, . Don't be content with just one contract or order for a material or component that eventually will be used in an airplane. An alert firm can land several. Big companies will be able to handle dozens.

Money's There—From $20 billion to $30 billion will be available for aircraft procurement between now and June 30, 1952. The Air Force is now spending at a rate of about $6 billion a year, far below actual appropriations. That may rise to a rate of $13 billion to $15 billion by the end of 1951.

Aircraft procurement appropriations already granted for the rest of fiscal 1951 in first and second supplemental appropriations total $6.6 billion for the Air Force and $3.4 billion for the Naval air arm. A third supplemental request is expected in March that will boost that $10 billion total. The budget for fiscal 1952 (which ends June 30, 1952) calls for $10 billion for Air Force procurement and $3.5 billion for Naval. Congress won't whittle much off those requests.

If We Have To—The money being requested is to build up the nation's capacity to 50,000 planes yearly. In a fractional war economy, we may not need to build that many. A good estimate is that we may have to climb to half that output or a little more to build up the Air Force. Once that's built, we can soar along by producing about 10,000 planes a year —if allout war is avoided.

Should we be forced to produce at the rate of 50,000 yearly, we wouldn't be able to reach that level until about July, 1953, Aircraft Industries Association estimates. Last year we produced about 3000 military aircraft. Based on World War II experience, production can be tripled in a year. Output last July was 215. Thus, by next July, we can turn out 645 planes, 1935 by July, 1952, and 5000 by July, 1953, when the 50,000 level would be finally achieved. Airframe weight production, a more accurate gage of aircraft production, triples in the same way (see chart on page 44). If 110 million pounds of airframe weight is produced in 1951, the output will still be a far cry from World War II years; 758.8 million pounds were turned out in 1943, 1101.0 million in 1944 and 599.6 million in 1945.

They Won't Talk—Air Force spokesmen won't say what kind of planes will be built if 10,000 are assembled a year. An estimate based on World War II experience and production since 1945 shows this possible breakdown: 40-45 per cent of the 10,000 will be day fighters; 10-15 per cent medium bombers; 10-15 per cent light bombers; 10-12 per cent carriers; 3-5 per cent heavy bombers; the remainder all-weather fighters, reconnaissance and miscellaneous type ships.

The Air Force now hints it's aiming for a 100-wing force, not 70;

("wing" is replacing "group" in flying jargon. A wing includes support units as well as actual aircraft. A group refers to aircraft only.) Under a 70-wing program, the Air Force would include four heavy bomber groups, 21 medium and light bomber groups, 22 day fighter groups, three all-weather fighter groups, six strategic reconnaissance groups, four tactical reconnaissance groups, ten troop carrier groups, plus 22 separate squadrons in support of the regular Air Force and 27 National Guard groups.

A Matter of Volume — Whether 10,000 or 50,000 planes are built a year, some 55,000 supplying opportunities are still available. The individual contracts will be larger in a 50,000-year than in a 10,000, but the number of contracts are expected to remain the same.

How can you get in on the aircraft program? If you're big enough, you may qualify in the Air Force's "Second Source Program." Under that plan alternate sources are set up for the product some prime contractor is making. The second source will be able to produce in case the first suffers some disaster or in case the first can't produce enough. Thus far, auto companies are the chief participants in the scheme. Fairchild Aircraft Corp.'s C-119 will also be produced by Kaiser-Frazer Corp. at Willow Run, Mich. Republic Aviation Corp.'s F-84F jet fighter will also be built by General Motors Corp. at Kansas City. Pratt & Whitney Division of United Aircraft Corp. will be paired off with Ford Motor Co. which will build the Wasp Major in Chicago.

What To Do—If you're a small or medium sized company, the best way to board the aviation bandwagon is to:

Canvass first your regular customers. It's possible they may already be in the aircraft program as prime contractors, alternate contractors or subcontractors. You may be able to supply components with a minimum of shifting of your own productive plant and distribution channels.

Inquire next among the prime contractors. There are probably less than 100. The Air Force and the Navy Bureau of Aeronautics have deliberately loaded up the major companies they did business with in World War II, many with a far greater volume than they can handle. That was done for speed and to avoid excessive renegotiation. The Air Force figures that those companies know the ropes on renegotiation and will know how to avoid it.

The Air Force also figures that the experienced prime contractors will know how and to whom to subcontract their excess orders.

Canvass next the subcontractors. There will probably be around 300, and many of them have already been lined up.

Make a careful check to see what you can make in electronic parts. In other areas of aircraft procurement, you may have to buck chains of co tracting forged during the ea 1940s. Not so in electronics, becau much apparatus is used now th wasn't even in existence in Wo War II. Partly because of the co plex electronic system, a plane day takes about four times as ma man-hours to build as a compara one ten years ago. The same reas ing holds for components of jet e gines and helicopters. They both w in existence in World War II, b they've come a long way in the pa five or six years. More than t helicopters were ordered by the m tary in 1950, a new high.

Avoid contacting directly the A Force or Bureau of Aeronautics u less under unusual circumstances. B cause of the highly complex natu of aircraft today, most of the pri contracts are pretty well earmark almost as soon as the order is co ceived. Alternate contracts are av able through the Air Force, but most all of them will go to big co panies.

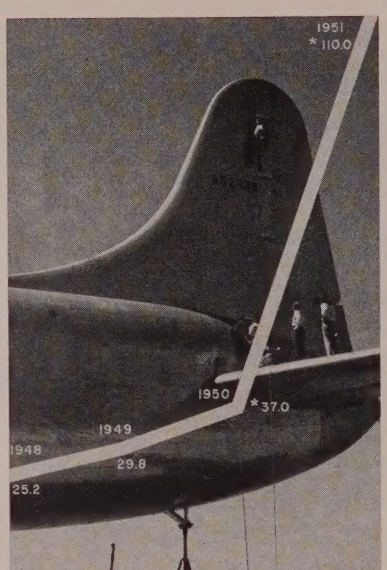
Keep informed on possibilities subcontract for civilian aircraft, some 190 civil transports proba will be built this year, compared w 75 in 1950. In touch with this ph of aviation procurement will be Office of Aviation Defense Requi ments at Civil Aeronautics Author

Plays the Field—The Air Force day has prime contracts with all airframe producers, all the aircr engine makers, all the propeller m ufacturers. Major contracts are w Boeing Airplane Co. for B-4 B-47C, B-50B bombers and the C transport; Douglas Aircraft C-124 and C-118B transports; Lo heed Aircraft Corp., F94C figh T-33 trainer and C-121C transp North American Aviation Inc., F-8 fighter and T-28 trainer; North Aircraft Inc., F-89 night figh Consolidated Vultee Aircraft Co B-36F bomber and T-29 trainer; R public, F-84E fighter; and Fairch C-119B transport.

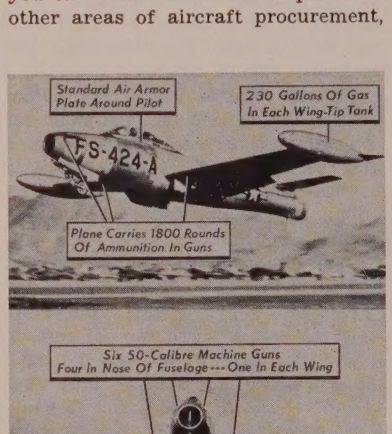
Major Air Force engine contra are with Pratt & Whitney for R-4360 and R-2800 piston engi and the J-48 jet; Allison Division GM, J-33 and J-35 jets; Gene Electric Co., J-47 jet; and Curt Wright Corp., R-1300 and R-3350 ton engines. The major propeller c tracts go to Curtiss-Wright, A products Division of GM and Ha ton Standard Division of United craft.

Electronics—Major Air Force pr contractors in electronics are Spe Corp., Lear Inc., Minneapolis-Hon well Regulator Co., Bendix Avia Corp., Hughes Aircraft Co., R Corp. of America, Philco Corp., W

Military Air Frame Weight
(In Millions of Pounds)



*Estimated. Source: Aircraft Industries Association


Standard Air Armor Plate Around Pilot
230 Gallons Of Gas In Each Wing-Tip Tank
FS-424-A
Plane Carries 1800 Rounds Of Ammunition In Guns
Six 50-Calibre Machine Guns Four In Nose Of Fuselage---One In Each Wing
Up To 32 Five-Inch High Velocity Rockets Can Be Carried

Acme

KOREAN HOT SHOT: Carrying only a fraction of its 32-rocket capacity, Korea-based F-84 Thunderjets are shooting down Russian-built planes regularly. Built by Republic Aviation Corp., Farmingdale, N. Y., the fighter weighs 10,500 pounds empty, can be loaded up to 24,000 pounds. Total gasoline capacity has never been announced; wing-tip tanks provide a supplementary fuel supply

Electric Co., Emerson Electric
g. Co., General Mills Inc., Collins
dio Co., Raytheon Mfg. Co., West-
house Electric Corp. and GE.
er miscellaneous major contrac-
s include AC Sparkplug of GM,
stman Kodak Co. and A. O. Smith
rp.

Nine aircraft manufacturers are in
1951 Navy program: Grumman
craft Engineering Corp., F-9F
0F fighters and AF-2S, AF-2W
isubmarine planes; Douglas, F-3D
nter, AD-4, AD-4N, AD-4W and
D attack planes; R-6D and
D-1 transports; McDonnell Air-
ft Corp., F-2H fighter; Lockheed,
V-5, P2V-6 patrol planes, PO-2W
ar warning plane, TO-2 jet fighter
iner, R70-1 transport; North
erican, AJ-1 attack bomber, F-2J
nter; Chance Vought Division of
ted Aircraft, F7U-3 fighter; Glenn
Martin Co., P5M-1 flying boat and
M-1 patrol plane; Consolidated
tee Aircraft, R3Y-1 flying boat;
rchild, R4Q transport.

Helicopters — Major producers of
Navy helicopters are Sikorsky
ision of United Aircraft, Piasecki
licopter Corp., and Bell Aircraft
rp., Electronic parts, propeller and
ine producers are the same as for
Air Force. Westinghouse also
lds the J-34 and J-46 jet engines
the Navy.

nce you get into the aircraft pro-
m, you can expect help from the
vly formed Aircraft Production
sources Agency at Wright Field in
yton. One of its major functions
to unravel production kinks aris-
from materials shortages and to
pare co-ordinated schedules for
ducing critical components and
ipment.

Plants and Equipment—As an air-
ft producer you may also get help
added plant and equipment. More
n 1000 plants were built during
rld War II. Although many were
l to private industry, about 500
e kept under government control.
nitions Board plans to have 253
those in reserve either on a stand-
basis or on the stipulation that
y be kept in condition to convert
war production within 120 days.
program to provide machine
ls has proceeded on schedule. More
n 161,100 general purpose machine
ls now are in storage. Stockpiled
ical goods may also help aircraft
ts producers. An estimated $2 bil-
worth of critical materials were
ckpiled as of late last year.

A metalworking company with no
ense scheme may find itself per-
nently grounded. Participation in
aircraft program may be your
portunity to keep up sky-high pro-
tion levels.

New Materials Control Plan Readied

Revised CMP to become effective July 1. It will guarantee priorities and guide production through control of steel, copper and aluminum. Claimant agencies map requirements

YOU can look toward a new Controlled Materials Plan to guarantee your priorities and guide your production after July 1. The National Production Authority is drafting a revision of the World War II plan to effect a balance between supply and demand for steel, copper and aluminum.

One effect of the CMP will be to bring the various parts of the defense program and the essential civilian programs into one unified effort. Control orders issued during the past several months have covered individual programs which now are threatening to compete with each other for the scarce materials.

How Much for Bobby Pins?—How the manufacturers of the less essential civilian goods will fare in obtaining scarce metals under the CMP remains to be seen. After the needs of direct defense and the directed civilian programs are filled, substantial tonnages of steel, copper, aluminum and other scarce metals will remain to be divided among civilian goods makers. How this is to be distributed is still to be solved.

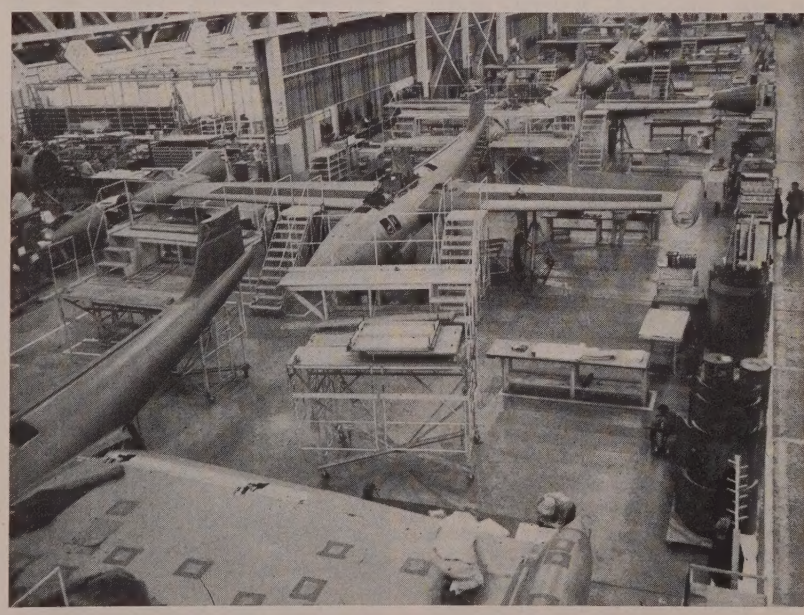
NPA officials have decided to go ahead with CMP at the start of the second half because the DO-ratings system shows signs of breaking down. As defense requirements rise, these ratings tend to become only hunting licenses, as in the case of priorities in World War II. Already, some holders of DO ratings report difficulty in obtaining materials.

Some Suggested Lists—All claimant agencies of the government are instructed to prepare proposed program schedules and material needs by Mar. 1 for 1951 by quarters.

Twenty-three claimant agencies have received suggested lists of programs. For example, the Department of Defense will prepare programs on aircraft, guided missiles, ammunition, weapons, tank-automotive, transportation and railway equipment, ships, electronics and communications, clothing and equipage, building supplies and equipment, military construction and stockpiles. The program will list major items required in each quarter.

The claimant agencies also will report the requirements for steel, copper, and aluminum—by type, shape and form—for each quarter.

Supply vs. Demand — NPA will



WILL BE BUSIER: Additional numbers of these Scorpion F89 all-weather jet interceptors will be built under a new contract for the Air Force. This assembly line at the Northrop Aircraft plant at Hawthorne, Calif., will be even busier once manufacture is accelerated. The F-89 is a twin-jet counterpart of the Black Widow night fighter of World War II. It will carry elaborate radar equipment and heavy armament, enabling it to fly in darkness or bad weather

chart the available supply of steel, copper and aluminum by quarters. By comparing the demand for direct defense, essential civilian and less essential civilian goods against the supply, NPA will know where we stand in materials supply.

Where the demand exceeds the supply, limitation orders may be issued restricting the amount of less essential goods to be produced. For example, automobile production may be cut back to free steel, copper and other materials for more essential uses.

Meanwhile direct defense and essential civilian goods will get all the materials needed. CMP will set the precedence as to which orders are filled first.

They Like It Now — Many metalworking companies as well as producers of steel, copper and aluminum favor the establishment of a new controlled materials plan. They believe it worked well during the last war. Consumers with priorities like the plan because it makes their ratings effective and they are not compelled to spend a lot of time looking for a supplier who will fill their order. Producers like the plan because it keeps material-hungry customers off their necks.

Important differences will exist between the new CMP and that which started in 1943. Then practically all nonessential civilian production requiring steel, copper and aluminum was banned. Under the new setup, a large amount of material should be available for civilian goods after the military and favored civilian programs are supplied.

Metalworking executives foresee quite a scramble for this "free" steel, copper and aluminum unless some equitable plan for distributing it is devised.

Keys from Industry—To organize for the revised CMP, the NPA will have to be expanded. The Iron & Steel Division will increase its personnel from the 100 presently employed to between 300 and 350. Most newcomers will be recruited through civil service. Only key positions will be manned with industrial men. The blueprint calls for four more key posts in the division: 1. Director of ferroalloys; 2. director of raw materials and facilities; 3. director of production; and 4. director of programs and distribution.

The recruiting of manpower and the organization of the new CMP is a job so large that NPA officials think they'll have to work at top speed to get the plan ready to function by July 1.

"Rated" Burdens—In the meantime many metalworking companies will be hard pressed to obtain the materials they need to keep their facilities and work force employed. That's one of the big problems worrying NPA officials. The earlier plan of taking care of hardship cases on a voluntary basis has been running into difficulties as producers became more burdened with rated orders.

Relief for hardship cases may be attempted through a multiple-band priority rating system or through the issuance of DO ratings in hardship cases. There is no agreement that either of these would be effective.

NPA also is considering end-use limitations on steel and other strategic materials. Some NPA people believe a 25 per cent cut back in automobile production would release materials to take care of a lot of hardship cases. Such a move would, of course, be fought bitterly by the United Auto Workers unless the auto industry were granted sufficient defense orders to take up the slack.

In Bounds—Instructions issued last week to the government claimant agencies request the latter to give only their requirements for steel, copper and aluminum.

NPA believes controls over these three metals automatically should keep the demand for all other materials within bounds.

The claimant agencies include the Petroleum Administration for Defense, Defense Power Administration, Bureau of Mines, Solid Fuels Administration, Fisheries, Department of Agriculture, Defense Transportation Administration, Department of Defense, Army Engineers, Economic Co-

Acme

MANLY FLEISCHMANN, National Production Administrator, orders controlled materials plan readied for operation July 1 to avert threatened breakdown in present priorities system

operation Administration, Office International Trade, Atomic Ener Commission, Maritime Administ tion, Civil Aeronautics Administ tion, Civil Aeronautics Board, B reau of Public Roads, Federal Co munications Commission, Natio Advisory Committee on Aeronauti Federal Security Agency, Vetera Administration, Housing & Home nance Agency, General Services A ministration and Bureau of Indus Operations of the NPA.

The program schedules and ma rial requirements list that they preparing will cover the producti of items on a list of "selected m jor items" drawn up by the NP They include several hundred ite under the general classifications electronics, photographic equipme industrial and construction mach ery, communications, transportati containers, chemicals, power fac ties and equipment, building ma rials and consumer goods.

NPA Steel Officials Change

Under an agreement reached l fall with the Iron & Steel Produ Industry Advisory Committee, a nu ber of key men in the National P duction Authority's Iron & Steel Di sion will return to their positions the industry Feb. 28 and be succeed by other men from the industry.

At that time David B. Carson w retire as director of the Iron & St Division and return to his job as v president, Sharon Steel Corp. His su cessor as director of the division w be Melvin W. Cole, Bethlehem St Co., Detroit.

Others who will return to th regular positions in private indust are A. P. Happer, chief, Pipe & Tu Section; W. B. Quail, chief, Sheet Strip Section; J. W. Robinson, chi Bars & Semifinished Section; C. Boyne, chief, Stainless Steel Secti L. E. Creighton, chief, Alloy & C Drawn Bar Section; Arthur M. Lo chief, Tin Plate Section; W. E. M lestein, chief, Plate Section; a William E. Bossert, assistant chi Plate Section. Their successors, fr the steel industry, have not yet b designated.

Thor Offers Packaging Space

A direct part in the defense eff will be given appliance distribut if a proposal of Thor Corp., C cago, is accepted. The wash machine manufacturer, already c ting back on its production, fe the more than 3.5 million square f of warehouse facilities operated 77 distributors can be converted i

T A FLYING SAUCER: Although it looks like the Mars Express coming in a landing with lights aglow and landing gear lowered, this is not a flying cer, but a butterfly valve leaf. Weighing 27,000 pounds, the 120-inch nze-rimmed cast steel leaf is being made by Westinghouse Electric Corp., nyvale, Calif. It will control the flow of water through a waterwheel generator penstock at a Southern California hydroelectric project

kaging centers for the armed es.

Under the proposal, Thor would act a prime contractor on defense kaging projects. The distributors uld be its subcontractors. Besides viding packaging centers in key ustrial and transportation centers, plan is expected to keep warese facilities at full capacity packng food rations, medical kits, etc.

ads Contract Seeking Office

he Greater Youngstown Area ndation has named Paul F. Hrabof that city to head a drive of aller industrial concerns in ngstown for a share of defense tracts. A group of fabricators ploying from 1 to 300 persons orized the foundation's defense conts committee.

odward Builds Coke Ovens

hirty new coke ovens will be conucted at the Woodward (Birmingn) operations of Woodward Iron Cost will be about $3.6 million. program will enable the company supply requirements of iron users oughout the southern industrial tion.

his is the fourth coke oven batry announced in this district retly. Republic Steel Corp. is build- 57 ovens at its Thomas (Birmingn) plant; Sloss-Sheffield Steel & n Co. is building 30 at Birmingn; and Alabama By-Products Corp. has 29 under construction at Tarrant, Ala.

Inland To Open New Ore Mine

A new iron ore mine near Crystal Falls, Mich., will be opened by Inland Steel Co., Chicago. Located on land leased from Jones & Laughlin Steel Corp., Pittsburgh, the mine will be placed in operation in late 1952. Development work will begin immediately. Expected production is 200,000 tons annually, says P. D. Block Jr., vice president in charge of raw materials.

More Titanium for National Lead

National Lead Co.'s Titanium Alloy Mfg. Division now controls the assets of the Hi-Alloy Castings and Tri-State Foundry Co. of Ellwood City, Pa. Titanium Division officials say added electric furnace capacity and power facilities at the Ellwood City plant will permit production of the various types of ferrotitanium alloys. The company hopes to augment production now underway at its Niagara Falls works.

Blooming Mill Goes to Austria

Lewis Foundry & Machine Division, Blaw-Knox Co., Pittsburgh, will build a two-high reversing blooming mill, including manipulators, tables and other accessories, for the Donawitz Steel Works of Alpine Montan Co., Austria. Amounting to over $1 million, the order was placed under ECA provisions.

Gold Needed for Steel

The steel industry spent $513 million last year, will spend a record $1.2 billion this year

ABOUT $1.7 billion will be the cost of expansion and improvement in the steel industry in 1950 and 1951, American Iron & Steel Institute says.

Iron and steel companies spent about $513 million last year; they'll spend $1.2 billion this year, a record sum that's 134 per cent higher than the amount allocated in 1950 and 307 per cent above 1941 expenditures. About 75 companies will expand finishing facilities; 35 to 40 will increase basic iron and steelmaking capacities. The ingot steel potential by the end of 1952 will be 117.5 million tons, compared with 104,229,650 tons a year now.

A Lot of Money — From 1946 through 1950, steel companies spent a total of $2.4 billion for new and improved facilities, equal to more than one-third of the total capital investment in steel at the end of 1949. In 1951 and 1952, more than $2.5 billion may be required to increase steel capacity to the anticipated level of 117.5 million tons. The billions spent and likely to be spent from 1946 through 1952 may be about equal to the total capital investment in the steel industry at the end of 1946.

From 1947 through 1949, the additions to steel capacity amounted to over 8,151,000 tons. Total expenditures on new plants and equipment were nearly $1.6 billion. From 1937 through 1941, when over 10 million tons were added to annual capacity, expenditures were slightly more than $1 billion.

Wants New England Face-Lifting

If New England is to retain its competitive position, it must undertake more plant renovation and expansion in 1951 than is now planned, says Walter H. Wheeler Jr., president of the New England Council. He pointed out that while the area did more than its expected share of war production in World War II, it was done with about one-half of the expected share of plant expansion.

Mr. Wheeler, president of Pitney-Bowes Inc., Stamford, Conn., advocates that New England industry take advantage of the accelerated amortization allowed by the government on defense facilities. An example, he says, is the New England steel mill at New London, negotiations for which are underway.

U.S. To Aid Tool Builders

Government will underwrite production pool. Priority aid will be extended

ORDERS for machine tools for defense and defense-support programs will be pooled with the government underwriting production schedules and governing distribution of the tools. Some 280 builders will receive orders over the next several months. Orders will be accompanied by DO ratings to enable builders to obtain materials and components for the tools.

Tools will be sold mainly to defense contractors and private industrial companies making essential civilian goods.

An order providing for pooled production of machine tools has been drafted and is being screened by the National Production Authority.

Ghosts Go West—A proposal to activate an across-the-board percentage of the phantom order program for machine tools will be abandoned. Some phases of the phantom order program will not be activated at all. In other cases, orders will be placed for double the quantities of tools provided in the ghost order program.

More Defense Ratings—Not only will DO ratings accompany the new pool orders, but the armed services will be asked to issue more defense ratings for orders which machine tool builders now have on their books. Builders complain they are unable to obtain steel, copper and components to cover production of urgently needed tools.

Easier Tin Restrictions?

They're made possible by Weirton electro-tinplating process that permits lighter tin coatings

WEIRTON Steel Co. has perfected an electro-tinplating process that will mean savings in pig tin and increases in the production of tin plate. The development may enable National Production Authority to modify its restrictions on the use of tin.

Electrolytic tin plate made with the new method is plated on one side with the amount of tin coating necessary to protect the contents of the tin can and on the other with only the amount needed to protect the outside from exposure. The industry practice has long been to put the same weight of tin coating on both sides of a sheet of tin plate. Weirton says no loss of quality results in using lighter coatings.

Tight Tin—Tin, which comes principally from the Far East, is already under rigid government controls. The tinplating industry has been cut back 20 per cent in the use of tin for the first quarter of 1951, and will be cut back 30 per cent of normal for the second quarter. NPA orders will curtail current tin consumption by about one-third. Weirton believes its process will enable Washington to revise tin production limitations.

Normally the tin plate used for some perishable foods bears a coating of 1¼ pounds basis of tin plate per base box, with distribution of 1¼ pounds basis of tin for the inside and outside of the cans. In that classification the electroplate will use one pound on one side and one-fourth pound on the other, a tin metal saving of 50 per cent. At the same time, the amount of tin plate surface it is possible to produce with the same quantity of tin is increased 100 per cent.

Big Savings—In the former one-half pound basis weights the savings are 25 per cent and the increase in area production 33.3 per cent. A former three-quarter pound basis weight shows a saving of 33.3 per cent and an increase in area of 50 per cent.

Weirton operates a tin mill at Weirton, W. Va., with a capacity of more than 22.5 million base boxes or over 1 million tons—of tin mill products per year.

Tinless Tin Can Project Pushed

American Can Co. is pushing a project to make a tinless tin can.

This progress has been made thus far: In pilot-line operations cans made of tinless steel and low tin-bearing solder have been produced at speeds comparable to that at which tin plate cans are made; cans have been made with tin-free solders that give promise of adaptability to universal use; tin-free cans in which plastic cement is used instead of solder for side-seams are now undergoing tests by several packers of oil and antifreeze.

American Can started its "Operation Survival" in 1946. The work has been intensified during the past several months.

Any Old Scrap for Sale? The Yards Are Bare

LOOK for further tightening in open market supplies of iron and steel scrap over coming weeks as result of the government rollback of prices and imposition of strict controls.

Scrap dealers, anticipating the Office of Price Stabilization action, worked feverishly the past several weeks to rid their yards of supplies at the higher prices then prevailing.

Movement of tonnage was hampered by the switchmen's strike, but most yards are reported pretty well cleared. As a result, supplies of purchased scrap will be limited for the next month or two.

All uncompleted contracts at the effective date of the price rollback, Feb. 7, take the lower ceiling prices.

New ceiling prices are accepted in good grace by dealers and brokers. Consumers appear satisfied.

Ceilings are based on a key price of $44 per gross ton, delivered Pittsburgh, for No. 1 heavy melting steel. This price, with the $1 broker's commission, brings the market back to a level only about $1.50 per ton under that prevailing early in January.

The controls follow in general the pattern established by the Office of Price Administration in World War II, including designation of consuming points as basing points and price differentials among the various bases and various grades. Three basing points are added to those in the old OPA schedule: Houston, Portland, Oreg., and Kansas City, Mo.

For the new list of government ceiling prices on scrap see page ... Additional comment on scrap market conditions is on pages 132, 134, ...

Steel Importers Squeezed

Caught in the narrow gap between base period price on steel as fro... and the high price of foreign s... are the steel importers, as represented by the newly formed American Institute for Imported Steel, New Y...

Because its members operated on a small mark-up during the ... period covered by the general p... freezing regulation and because s... ordered far in advance is priced c... siderably higher than that avail... during the base period, the insti... took its case to the Office of P... Stabilization. Institute represen... tives feel that relief will come s... regulation affecting not only s... but other commodities. Relief ... probably be a permitted markup o... legitimate costs.

The institute was formed to ... tinguish the established merch... from the speculators who were ... ing imported steel at highly infl... prices. Headed by Nicholas Schil... of Amerlux Steel Products Corp., ... organization represents Atla... Gulf and Pacific Coast firms ... handle 95 per cent of imported s...

ce Curb Exemptions

ll military items are free from e freeze until Apr. 1; then exmptions will be more limited

E COMMODITY or service you e to the military is not subject to general price ceiling regulation. conomic Stabilization Agency's plementary Regulation No. 1 to the e freeze decree exempts all comities and services peculiar to milry needs until Apr. 1. Then the mption will apply only to a limitroup of commodities and services. after Apr. 1, price adjustments be permitted in "hardship cases" sellers who have entered into conts with the military services items retained under ceilings.

xempt — Specific exemptions in s to a defense agency after Apr. ill include aircraft, ammunition, bs and devices connected with bs, fire control equipment, weapn radar equipment, torpedoes, ored vehicles, automobiles, elecic devices, tools and many other ns. Sales to a defense agency of e services will be exempt: Re and maintenance of ships; exmental, development and research ices etc.

ales by the Atomic Energy Comion and purchases of strategic critical materials for stockpiles also especially exempt.

pecial Case—Many commodities services purchased by defense agencies are of a strictly military nature, and the imposition of price ceilings upon them is not practical or advisable because of frequent changes of specifications or production plans, or because of variations in the conditions under which contractors and subcontractors operate.

The government also figures it is protected because most defense contracts are subject to renegotiation.

★★★★★★★★★★★★★★★★★★★★★★★★★ CHECKLIST ON CONTROLS ★★★★★★★★★★★★★★★★★★★★★★★★★

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to U. S. Commerce Department, Division of Printing Services, attention E. E. Vivian, Room 6225, Commerce Bldg. Washington 25. For ESA orders, write J. L. Miller, Economic Stabilization Agency, Room H367, Temporary E Bldg., Washington 25.

Materials Orders

RUBBER—Amendment 1 to Order M-2 reduces or eliminates use of natural rubber in certain products beginning Mar. 1.

ALUMINUM—Amendment 1 to NPA Order M-5 raises the ceiling on the number of defense orders aluminum producers and fabricators need accept in any one month. There is no change in the percentage of defense-rated (DO) orders distributors and jobbers must accept. The 60-day lead time provision of the previous order is continued.

ALUMINUM—Amendment 2 to NPA Order M-7 specifies more than 200 items (List A) in which aluminum cannot be used after Apr. 1, prohibits on and after Apr. 1 the use of more or better grade aluminum than is necessary for the functional operation of any item, and bars effective June 1 the use of aluminum in the manufacture of any item to be used solely for decorative or ornamental purposes. Items on List A may be completed if they were in the process of manufacture on or before Mar. 31 and completed by May 31. Items on the list which are completed by May 31 may be sold after that date.

COPPER & COPPER-BASE ALLOYS —Direction 1 to NPA Order M-12 permits producers and users of copper and copper-base alloys to readjust their base period use averages in cases where manufacturing or construction operations were shut down for more than 15 consecutive days during the first half of 1950. The direction also provides a formula for making the adjustments. Direction 1 to NPA Order M-12. Effective Feb. 1, 1951.

COPPER & COPPER-BASE ALLOYS —Amendment 2 to NPA Order M-16 allows miscellaneous producers of copper and copper-base alloys, such as foundries, chemical plants, iron foundries and aluminum foundries, to melt and process copper scrap generated in their own plants, and to accept from dealers the types of scrap specified in the order. Prior to the amendment, only copper refineries, ingot makers, copper wire mills or foundries were permitted to melt and process scrap arising from operations in their own plants. NPA Order M-16 as amended Jan. 31, 1951. Effective Jan. 31, 1951.

LEATHER—M-34 orders leather processors to cut to military specifications a certain number of pieces from each section of hide.

HIDES, KIPS, CALF SKINS—M-35 temporarily freezes the sales or delivery of them.

Price Regulations

DEFENSE NEEDS — Supplementary Regulation No. 1 to the General Ceiling Price Regulation of Jan. 26, 1951, exempts until Apr. 1, 1951, from the general regulation all sales to defense agencies or to suppliers with defense contracts or subcontracts of commodities or services for military use. After Apr. 1 the exemption applies only to a more limited group of commodities and services. Supplementary Regulation No. 1 (effective Feb. 1, 1951) to the General Ceiling Price Regulation of Jan. 26, 1951.

COAL—Supplementary Regulation No. 2 (effective Feb. 3, 1951) to the General Ceiling Price Regulation of Jan. 26, 1951, establishes an adjustment for retail solid fuel dealers to take account of recent mine price increases.

IRON & STEEL SCRAP—A Ceiling Price Regulation effective Feb. 7, 1951, places price ceilings on iron and steel scrap. The ceilings are based on a key price of $44 a gross ton, delivered Pittsburgh, for No. 1 heavy melting steel. The regulation lists 41 basing points and their base prices, differentials for various grades of scrap, switching charge deductions, and specifications of grades of scrap.

JECT TO DELAY CLAUSE: Somewhere a construction or fabrication job be delayed for the want of this structural steel, delayed by the railroad ce. Although many of the "sick" switchmen have "recovered," this plant J. S. Steel Co. at South Chicago, and many others in the Middle West and East, saw steel shipments pile up and production facilities shut down

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, S*

The National Inventors Council objects to the attorney general's belief that the U. S. should be permitted to confiscate inventors' ideas for defense

SHALL the government be permitted to confiscate the ideas developed by inventors to help the national defense program? Yes, says the attorney general. No, says the National Inventors Council.

The council is about to formulate a policy, for submission to Defense Mobilizer Charles E. Wilson, to protect an inventor's right under the patent system to bargain for compensation when his invention is used and to prevent pirating of his inventions by the government or any other agencies or individuals.

To a Boil—Thus will be brought to a head a tiff touched off by the attorney general in May, 1947, and again in December, 1950, when he held: "Where patentable inventions are made in the course of performing a government-financed contract for research and development, the public interest requires that all rights to such inventions be assigned to the government and not left to the private ownership of the contractor."

Assurance of fair treatment, the council feels, is necessary to encourage inventors to make their full contribution to the country's military might. Since Chairman Charles F. Kettering revitalized the council last year at the time our troops moved into Korea, the interest of inventors in helping the defense program has been multiplied by twelve. The council now is receiving ideas from inventors at the rate of 3000 a month. And the quality of these ideas is much higher than during World War II. It will be found, upon evaluation of these ideas, the council believes, that a superior performance is being staged by the country's inventors in the present emergency.

Defense Pushes Basic Research...

Continuance of the basic research work of the Army, Navy and Air Force is assured under a Research and Development Board ruling which establishes a minimum budget for such studies.

Under the formula, Department of Defense expenditures for basic research must be at least $30 million in the current fiscal year.

The basic research conducted by the armed services is aimed largely at filling in the gaps of the research program of private institutions.

In another action, the Research and Development Board has des nated the National Research Co cil's Metallurgical Advisory Bo as a clearing house for all gove ment metallurgical information interest to the armed services.

Mr. Wilson Holds the Edge . . .

Many Washington observers lieved the question—Who will be manpower man, Charles E. Wilson Maurice J. Tobin—moved closer solution when Mr. Wilson acted the President's spokesman last M day evening in a broadcast to press railroad trainmen with harmful effects of their wild strike.

If Mr. Wilson comes out on t labor leaders will be disappoint Labor leaders also would be dis pointed should Economic Stabili Johnston refuse their demand t the Wage Stabilization Board be gi the additional assignment of settl wage disputes; Mr. Johnston mi give in on this point for he alw has been sympathetic to labor le ers.

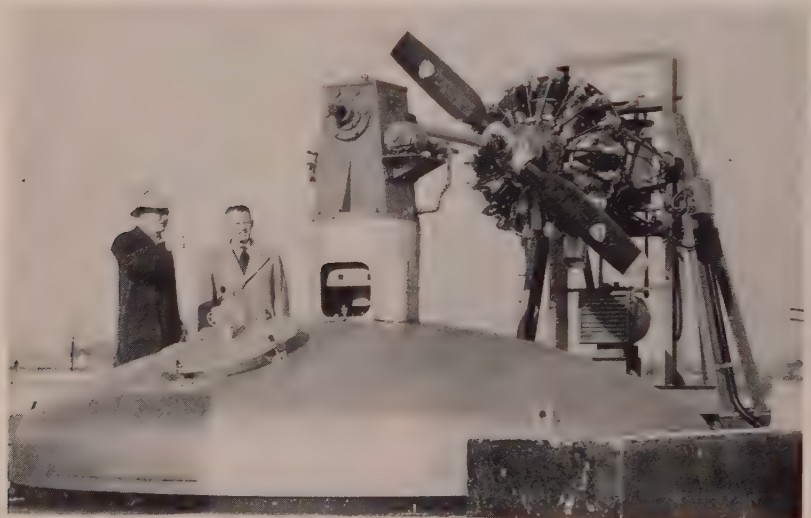
Best news of the week for la leaders was the appointment of bert J. Hayes, president, Internat al Association of Machinists, Special Assistant to Mrs. Anna Rosenberg, Assistant Secretary Defense for Manpower and Per nel.

Scrap Institute to the Rescue .

An example of the service a t association can render in the pre defense emergency was affo when the Office of Price Stabiliza late Friday night, Feb. 2, compl screening its iron and steel s price schedule.

With hundreds of interes parties clamoring for copies, the promise the board could get from Government Printing Office was livery the following Tuesday— satisfactory in view of urgent p tical needs. Ed Barringer of the stitute of Scrap Iron & Steel tained a copy from the board, pu a night shift in his mimeograp department and early the next m ing—Saturday—was ready with copies.

Thus, he supplied a copy of th page document to his own insti and such groups as the press an NPA Scrap Iron & Steel section. latter at once was able to prepa allocate scrap Feb. 7, the effe date of the price schedule.



DOWN UNDER: Inspecting the first supersonic propeller "spin pit" at Aeroproducts Division, General Motors Corp., Dayton, O., are M. M. Monroe (left), general manager, and R. R. LaMotte, chief engineer. Designed to accomplish various mechanical tests upon supersonic propellers, the pit was developed under contract with the Navy's Bureau of Aeronautics and is part of a 100 per cent expansion of facilities program which will enable employment to reach 4000

STE

Yes we build Merchant Mills

STEEL CO.	Pittsburgh, Pa.	1892
GHLINS, LTD.	Pittsburgh, Pa.	1893
OARD I. & S. CO	Mingo Jct., Ohio	1895
UGHLINS, LTD.	Pittsburgh, Pa.	1898
UGHLINS, LTD	Pittsburgh, Pa.	1898
TEEL CO.	Pittsburgh, Pa.	1900
STEEL CO.	Duquesne, Pa.	1900
HARVESTER CO.	Duquesne, Pa.	1902
HE STAHLWERKE	Chicago, Ill.	1903
VANNA STEEL CO.	Meiderich, Germany	1904
TA STEEL HOOP CO.*	Buffalo, N. Y.	1904
S MARIEN BERGWERKS & H. V.	Atlanta, Ga.	1905
NATIONAL HARVESTER CO.	Osnabruck, Germany	1906
EHEAD IRON & STEEL CO.*	Chicago, Ill.	1906
KOENIGS & LAURAHUETTE, A. G.*	Tredegar, England	1906
AND STEEL CO.	Koenigshuette, Germany	1907
SON NUT COMPANY	Indiana Harbor, Ind.	1910
ACKAWANNA STEEL CO.	Cleveland, Ohio	1910
EPUBLIC IRON & STEEL CO.	Buffalo, N. Y.	1911
PITTSBURGH CRUCIBLE STEEL CO.	Youngstown, Ohio	1912
YOUNGSTOWN SHEET & TUBE CO.	Midland, Pa.	1915
YOUNGSTOWN SHEET & TUBE CO.	Youngstown, Ohio	1915
UNITED ALLOY STEEL CORP.	Youngstown, Ohio	1915
BETHLEHEM STEEL CO.	Canton, Ohio	1915
LACKAWANNA STEEL CO.	Bethlehem, Pa.	1916
JONES & LAUGHLIN STEEL CO.	Buffalo, N. Y.	1916
TATA IRON & STEEL CO.	Pittsburgh, Pa.	1917
ACIERIES DE FIRMINY	Sakchi, India	1919
UNITED STEEL COMPANIES, LTD.	Dunkerque, France	1919
INTERSTATE I. & S. CO.	Sheffield, England	1919
UNITED ALLOY STEEL CORP.	Chicago, Ill.	1920
KANSAS CITY BOLT & NUT CO	Canton, Ohio	1920
INLAND STEEL COMPANY	Kansas City, Mo.	1922
FORD MOTOR COMPANY	Indiana Harbor, Ind.	1922
SOC. ANON. D'OUGREE-MARIHAYE****	River Rouge, Mich.	1922
BETHLEHEM STEEL CO.	Ougree, Belgium	1923
McKINNEY STEEL CO.	Johnstown, Pa.	1924
McKINNEY STEEL CO.	Cleveland, Ohio	1924
FORD MOTOR COMPANY***	Cleveland, Ohio	1924
YOUNGSTOWN SHEET & TUBE CO.*	River Rouge, Mich.	1926
YOUNGSTOWN SHEET & TUBE CO.	Indiana Harbor, Ind.	1928
INTERSTATE IRON & STEEL CO.*	Indiana Harbor, Ind.	1928
WHITEHEAD IRON & STEEL CO.	Chicago, Ill.	1929
ILLINOIS STEEL COMPANY***	Newport, England	1929
JONES & LAUGHLIN STEEL CO.	Chicago, Ill.	1930
WHITEHEAD IRON & STEEL CO.*	Pittsburgh, Pa.	1930
BROKEN HILL PROPRIETARY CO., LTD.***	Newport, England	1932
GUEST, KEEN, NETTLEFOLDS, LTD.***	Newcastle, Australia	1932
AUSTRALIAN IRON & STEEL, LTD.****	Cardiff, Wales	1936
NEW JARROW STEEL CO.***	Port Kembla, Australia	1937
SHEFFIELD STEEL CORP.*	Jarrow, Durham, England	1938
ALUMINUM CO. OF AMERICA*	Houston, Texas	1941
BETHLEHEM STEEL CO.	Massena, N. Y.	1941
SHEFFIELD STEEL CO.	Lackawanna, N. Y.	1945
ACINDAR INDUSTRIA ARGENTINA DE ACEROS S.A.*****	Kansas City, Mo.	1946
SHEFFIELD STEEL CORP.	Argentina	1947
DOMNARFVETS JERNVERK***	Houston, Tex.	1948
LANCASHIRE STEEL CORP.*	Domnarvet, Sweden	1948
ILVA ALTI FORNI e ACCIAIERIE d'ITALIA*	Warrington, England	1948
COLORADO FUEL & IRON CORP.***	Bagnoli, Italy	1949
	Pueblo, Colo.	1950

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***Mill also rolls strip and skelp
****Mill also rolls rod and strip
*****Mill also rolls rod and skelp

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est Germany Moves Closer to Socialism

The nation adopts union co-rule in the steel and coal industries. Personnel managers in individual companies will be labor men

E WEST German government has approved a program establishing n co-rule in the steel and coal stries.

hreats Win—By threatening a tionwide strike, powerful German rde unions pushed across their gram in the German cabinet and slature. Hans Boeckler, 75-year-l president of the unions is no ar-t proponent of "co-determina-n," but he's forced to back the n by strong left-wingers in the ks. The program goes into ef-t in those steel and coal com-ies in a trusteeship under the Al-. decartelization law No. 27. About per cent of the major mines and l plants are involved. Irony: e agreement is made possible part-because of the law No. 27, origi-lly backed by the U. S.

ssential points in the agreement :

Councils—Eleven-man councils or rds of directors are to be cre-d at each plant or mine. Five mbers will be nominated by the ons, five by stockholders and the venth jointly. In case of a tie e, the latter is to be selected by pecial senate to be named by the eral government for each entire ustry.

Representatives—In the case of labor representatives on the coun-two will be selected from work-at the site, two will represent the de unions without regard to em-yment status, and the fifth will be prominent man from public life. ur of the management representa-es will be selected from among the ckholders, the fifth from public e.

Senates—Provisions for the indus-y senates will be decided upon sub-quently, but they probably will be deled after traditional German onomic chambers representing in-stry and labor.

Social Managers—One of the most r-reaching of the provisions in the reement may be that the unions n the right to name the social anager or personnel manager in e companies involved. Communists e still numerous in West German ions and may get the personnel bs. At least one already has—at e Huckingen steel plant near Duis-rg.

With this success behind them, German unions are pushing to line up other industries, too. They have already made similar demands for chemical companies and banks and reportedly have the same scheme ready to spring on all general manufacturing firms.

U.S. Pipe Buys French Interest

Interest of Compaignie de Pont-a-Mousson, Nancy, France, in Pontusco Corp., owner of all the common stock of United Concrete Pipe Corp., is now owned by United States Pipe & Foundry Co., Los Angeles, formerly a joint owner. United States Pipe manufactures cast iron pressure pipe. It is completing a plant in Decoto, Calif.

TURNS THREE TURNS A DAY: Operating on three shifts per day is this lathe, in operation at the machine shop of Akers Styckebruk Aktiebolaget, Styckebruk, Sweden. Made by Mackintosh-Hemphill Co., Pittsburgh, the 44-inch screw feed lathe works at speeds up to 39 rpm for rough turning. When turning roll necks for roller bearing mountings, it meets tolerance specifications of about 5/100-millimeter (about 0.0019-inch)

A Way To Save Alloys: Use Boron-Treated Steels

In the interests of alloy conservation, users of steel for quenched and drawn parts inevitably will have to turn to boron-treated carbon steels, thinks Walter E. Jominy, staff engineer, Chrysler Corp., Detroit, who addressed the Cleveland Chapter, American Society for Metals.

Speaking on alloy steels from the viewpoint of the consumer, he said that specifying constructional steels by minimum hardenability instead of by chemistry is a definite trend of the moment and will expand as alloys become more critically short. Available commercially now are about 70 of the so-called "H" steels for which hardenability bands are specified.

In discussing depth of hardening on heat treated automotive parts, Jominy said he believed hardness penetration to one-fourth the radius of a round part was ample, and that 90 per cent martensite requirement in the hardened area was a reasonable goal. Hardening all the way through a cross-section increases the tendency to distortion and cracking.

He reviewed tests made on a wide assortment of automotive axle shafts, principally of steels in the 1300, 4000 and 5100 series, and with only one exception hardness did not go beyond one-quarter of the distance from the surface to center. The exception was three-eighths of this distance.

Cabinetmakers To Hear Hamaker

L. S. Hamaker, assistant general sales manager, Republic Steel Corp., will speak at the annual meeting of the Steel Kitchen Cabinet Institute, in Cleveland, Feb. 14.

His subject will be "Problems Facing the Steel Fabricator." Fol-

lowing the luncheon meeting, representatives from the industry will take part in a round-table discussion of problems and developments in the cabinet-making field.

Personnel Snags To Get Airing

Wage stabilization, approached from points of view of management and labor, will get a going-over at the personnel conference of the American Management Association, Feb. 26-28 at the Palmer House, Chicago. In other sessions, government and industry speakers will discuss emergency manpower problems. Some questions on the agenda: What preparations will be necessary to obtain wage and salary adjustments under controls? What probably will be the substitute for the Little Steel Formula? What should be done about "Escalator and Improvement Factor" clauses? How will stabilization affect collective bargaining?

Extruders Cry 'Ouch'

Small aluminum extruders detail their troubles in a brief before Small Business Committee

SMALL OUTFITS making extruded forms and products are in a tight squeeze. The pressure on them has been increasing since enactment of the Defense Production Act of 1950 and subsequent NPA materials orders. A brief filed by the Aluminum Extruders Council of Boston with the House Select Committee on Small Business details the forces that it says are working the little fellows over.

This is the way the council feels about the matter: Even though various sections of the defense act provide for equitable distribution of rated orders and available aluminum and specifically mention the encouragement of small business, discrimination exists. The council says no representatives of the companies it serves have been given an opportunity to be invited for consultations or given any facts or figures that might assist in promulgating NPA aluminum material orders.

Under Control—The M-7 order on aluminum is also in for criticism. The council says, for all intents and purposes, prime producers are excluded from its provisions. Section 26.24 says the order does not apply to those who produce or convert aluminum or who use it in the production of other metals. The council composed of about 85 per cent of the firms in the U. S. with about per cent of the country's extrusion presses, thinks M-7 was written to the exclusive control of the "li fellow."

Many independent extruders h failed to receive their aluminum lets from scrap deposited with "preferred list" of those qualified conversion. Not only is a source aluminum being taken away, but of conversion equipment in extrude shops is prohibited. An attempt obtain permission for unrestric use of imported aluminum has fail no action has been taken on subject.

The brief also mentions anot case of alleged discrimination: L summer one of the prime produc increased the price of billets (vir aluminum, used by extruders) reduced the price of extrusions.

Bright Spots—The only refresh element, says the council, is the a tude of the Air Force and Na They have indicated the importa of keeping the presses of the in pendent extruder operating so t may be available for immediate c version to defense production.

Because the limitation orders the NPA have little or no affect u the prime producers of aluminum, council is urging that a full inve gation of the aluminum industry instituted and that its administrat by the NPA also be reviewed. states that any theoretical gap civilian production for the produc has been more than closed by defense orders they possess.

STAMPING THROUGH THE PLANT: Among those witnessing the various operations of Leake Stamping Co., Monroe, Mich., at its open house are Mr. and Mrs. William Baumheckle. He is vice president and director of the company. They are watching one of several large presses stamp stone deflectors for use on Kaiser automobiles. The company, now in its 14th year, has 200 employees and has expanded five times since its founding. Heat treating, joining, testing and painting facilities supplement the stamping equipment

Ohio Firms Plan Contract Talks

Ohio manufacturers interested in getting into defense work will meet at Masonic Auditorium in Cleveland Feb. 20. The conference will provide opportunity for firms to register machine, manpower and open capacities with procurement officers. The talks should reduce confusion on procedure, says Clay H. Hollister, of Case Institute of Technology, and conference chairman.

C. F. & I. Buys Worth Steel

Colorado Fuel & Iron Corp. is tending its operations to the East Seaboard and diversifying its line steel products by contracting to p chase Worth Steel Co., Claymo Del. Purchase is scheduled to be c summated Mar. 5.

C. F. & I. now operates integra steel plants in Pueblo, Colo., and B falo, and with its subsidiaries has steel manufacturing plants in Mas chusetts, Pennsylvania and Calif nia. C. F. & I. will operate Worth plant as a subsidiary un the name of Claymont Steel Co and will continue to produce Wort line of products, which primarily steel plate for the ship, tank heavy boiler trades and transmiss pipe for the oil and gas industries.

The Worth plant, located on a 6

tract along the Delaware river, an annual ingot producing ca- y of 468,000 net tons. C. F. & I. vestigating possibilities of ex- ing the Claymont operations to maximum advantage of the egic tidewater location.

F. & I. is the nation's tenth st steel company and produces ipally wire, rails and structural .e.

tl a Shortage

lespite record ferrous produc- on, the NPA is hearing the cry shortage from many sources

CRY of "shortage" still arises iron consumers despite record production.

nong those voicing plaints are cast iron boiler and radiator ers. Their industry advisory nittee felt it necessary to meet National Production Authority ials to insure a flow of materials. oduction of boilers and radiators expanded to the point where de- d for foundry iron exceeds the lable supply of it. The industry esentatives also reported that for radiator jackets is difficult btain.

gures released by the American & Steel Institute show that iron umers outside the steel industry 1.3 million tons more iron in 1950 in 1949. These 1950 shipments ed 5,692,000 tons.

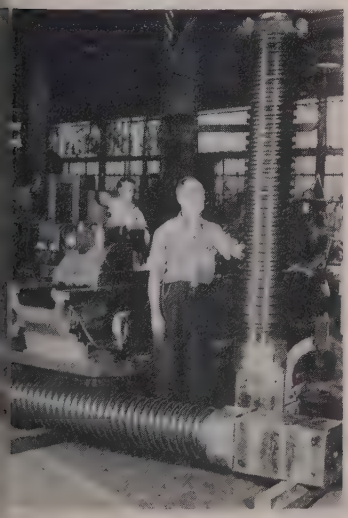
elp Wanted—Helping make pos- the increased shipments of iron sers outside the steel industry the record production of 64,589,- tons of iron in 1950. That was ncrease of more than 11 million over 1949.

lso putting the "bite" on the NPA for materials is the hack saw and metal cutting band saw industry. To keep defense and essential civilian industries operating, it is requesting more high speed and alloy tool steel. Molybdenum and tungsten alloy supplies are not large enough to reduce the growing order backlog.

A Way Out—The shift from tungsten to molybdenum and reserving of half of the molybdenum for tool steels will help. The NPA revealed that molybdenum probably will be allocated in a manner similar to tungsten.

The saw industry used about 5000 tons of steel in 1949, 6000 in 1950 and estimates its consumption at 8000 tons in 1951. The amounts are about evenly divided between band saw and hack saw blade producers, the former using tool steel alloys, the latter high-speed steels.

BETTER RATE OF EXCHANGE: Lower initial investment for supporting structures in processing plants will result from a new method of removing heat exchanger bundles. Developed by M. W. Kellogg Co., Jersey City, N. J., the method makes use of a special jack of the type shown. The remover, itself a portable modified commercial center-hole hydraulic puller, permits a more compact general plant layout and lighter exchanger supports. Device can exert a push on the tube bundle up to 12,000 pounds for a maximum distance of 16 feet



GOT A SCREWDRIVER?: Measuring 12 inches in diameter and 8 feet 9½ inches long, these 3200-pound housing screws were machined to a tolerance of plus or minus 0.005-inch. Made for adjusting the forming rolls of steel rolling mills at the Fontana, Calif., plant of Kaiser Steel Corp., the screws were made of electric furnace steel by National Supply Co., Torrance, Calif. Bronze nuts, weighing 2400 pounds and having an inside thread with a 2-inch pitch, will be used on the screws. All forging, heat treating and machining on the screws was done at National Supply. A special fixture for flame hardening the threads was built for this job

Granite City Buys Pig Iron Plant

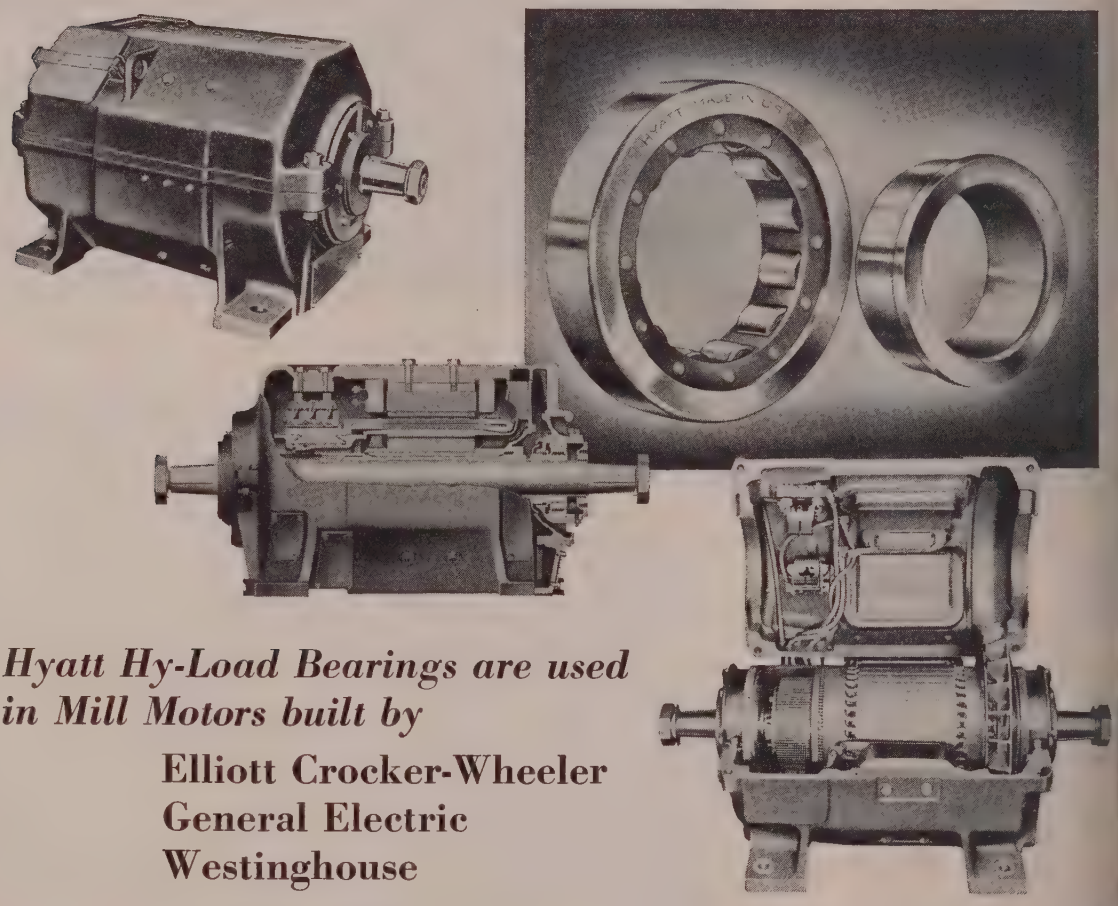
The Koppers Co. pig iron plant at Granite City, Ill., was purchased by Granite City Steel Co. Facilities consist of one 600-ton and one 500-ton blast furnace, a 49-oven coke plant and other producing equipment.

The plant, capable of producing 1000 tons of pig iron per day, was acquired from the War Assets Administration three years ago; it has been modernized by Koppers during its ownership.

Rheem Co. Enters Supplier Race

Rheem Mfg. Co. will construct a 200,000-square foot addition to its South Gate, Los Angeles, plant and is seeking subcontracts from several major West Coast airplane manufacturers. In World War II, the company was a subcontractor for Lockheed, Consolidated Vultee, Northrop, Bendix and Ryan. Laurance H. Cooper, former president and general manager of Pacific Airmotive Corp. and wartime manager of the Consolidated Vultee plant at Elizabeth City, N. C., will head Rheem's new aircraft department.

HYATT Protection for your Mill Motor



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HYATT ROLLER BEARINGS

C. TUTTLE *Detroit Editor, STEEL*

Mirrors of Motordom

Chrysler and General Motors battle over relative merits of high-compression engines. New V-8 develops 180 bhp, more than any other current passenger car unit

DETROIT

of the hottest fights in auto-re history is the battle now d between Chrysler Corp. and al Motors over relative merits heir high-compression engines. sler contends (without mention-ames) it has a substantial edge e the competition because it has oached the high-compression em from an engineering stand-; that its engine boasts "me-cal octanes" which will always an edge regardless of the direc-of gasoline octane ratings.

e Chrysler V-8 has several dis-tions: Rated at 180 bhp, it pro-s more power than any other nt passenger car engine; it de-s more power for its piston dis-ement; it contains a hemispheri-combustion chamber previously d only in racing car and aircraft nes and in some low-production pean power plants. High power ut is due principally to three rs—shape of the combustion mber, lateral arrangement of es, 90-degree "V" cylinder setup short stroke and large bore.

r the hemispherical combustion mber, Chrysler engineers list e advantages: High volumetric iency; high thermal efficiency low specific heat rejection; ex-ional combustion characteristics; llent adaptability to higher com-sion ratios; and greater valve bility.

eathes Easily — Bringing these ts down to more easily under-d terms, volumetric efficiency is easure of the engine's breathing city. In the chamber and valve gn stress was placed on achieving mum resistance to air and fuel ', both on intake and exhaust. es are above average diameter have high lift, with intake and ust manifolds arranged to min-e restrictions. The intake mani-is divided into two sections, each which feeds the two center cyl-rs in one bank and the two outer nders in the other bank. Each ch of these sections is approxi-ely the same length to insure dis-ution of the air-fuel mixture in same quantity and in the same th of time. Furthermore, the nches are correlated to the firing order of the cylinders to permit successive firing cylinders to draw the mixture through opposite risers and preclude "intake interference."

Thermal efficiency is the measure of an engine's ability to utilize heat energy in the fuel. To attain greater heat utilization by means other than high compression, three factors —combustion chamber heat loss, incomplete fuel combustion and time required for combustion—are carefully controlled. The dome-shaped combustion chamber reduces the surface area through which heat can be lost. Heat loss through the walls of the exhaust ports is also minimized by low restrictive characteristics at the valves. Lower heat transfer to cooling water permits an 18 per cent reduction in radiator core area from last year's plus a reduction in fan diameter, number of blades and speed.

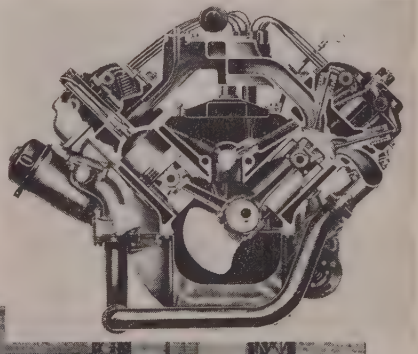
The widely separated valves make possible the positioning of the spark plug near the center of the dome which permits short flame travel for complete combustion and also decreases the likelihood of pre-ignition and hot spots. Deposits which form on the chamber are thin and evenly distributed. Detonation-free performance is possible with regular grades of gas.

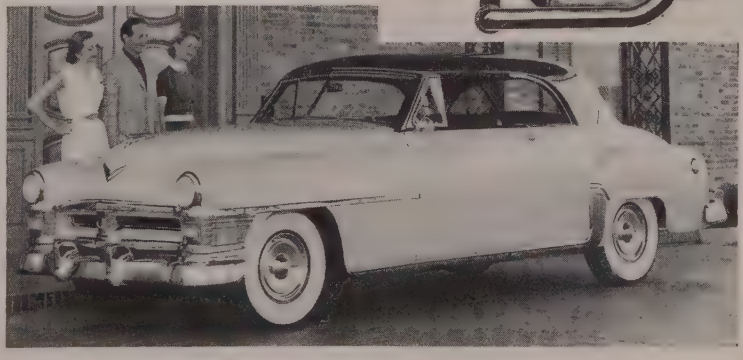
As higher compressions are made possible through increasing octane ratings of gasoline this engine's design will be modified only slightly. Valves can be made larger, and the domed construction of the chamber is inherently strong enough for higher compressions.

Valve durability is enhanced by the design of the cooling water passages. Lower valve operating temperatures and decrease in the possibility of valve seat distortion, it is claimed, will add life to the valves.

Weight per HP Down 30%—Increased rigidity of the V-8 design is accompanied by a significant reduction in weight. From fan to crankcase flange at the rear the engine measures 9¼ inches less than the 1950 product. Width is increased 6⅞ inches but this increase occurs at the top so no increase in frame width is required, only a minor revision in fender shield design being necessary to house the engine. Height is the same. Total weight of the power plant assembly including transmission is 923 pounds compared with 1002 pounds in last year's design. Weight of the engine per horsepower is reduced to 5.13 pounds from 7.42.

From a fuel consumption standpoint, average improvement over last





ANOTHER HARDTOP: This Chrysler New Yorker Newport is one of 21 body styles on the line's 1951 models. Beneath its broad sloping hood is the new 180-hp V-8 FirePower engine, the most powerful in the automobile field (see STEEL, Jan. 22, p. 57, Jan. 29, p.44). A cross section of this engine is shown at right. The styling is also available on Windsors and Imperials

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year's design is approximately 10 per cent. Horsepower, of course, is 33 per cent higher. In dynamometer tests through the normal operating speed range of the two engines the new design gave better fuel economy ranging from 2 to 27 per cent.

Devising a method to actuate the valves was one of the knottiest problems encountered in the engine's design. The lateral arrangement, with widely separated valves, accounts for the difficulty. As finally engineered, the pushrods and rocker arms operate on twin rocker shafts, the arms facing in opposite directions.

A single carburetor with dual throats is used. The throttle body is water heated to prevent carburetor icing. The automatic choke features a heat-retaining plate which makes possible use of a more active thermostatic coil and also stores heat to enable the choke to cool down uniformly after a hot run.

Belt in the Back—Styling changes in the 1951 Chryslers include a sloping hood for better visibility, new front fenders, new front and rear fender moldings and a belt molding that encircles the car. A "wrap-around" rear window increases the glass area in the back by 30 per cent. Differences in the grilles distinguish between each model in the line.

Appearing rather hum-drum alongside of its passenger-car cousin, the new Dodge truck, nevertheless, is worthy of inspection. Incorporating 50 refinements, the trucks feature increased power, better brakes, improved steering, better shock absorbers and more driver comfort. The line is powered by eight different engines, horsepower of which has been stepped up as much as 20 per cent through use of twin carburetion and twin exhaust.

Styling feature is a new two-louver grille mounting a center medallion. Paint and baked enamel is used on grille members and bumpers.

Pass the Aspirin

The state of mind of the automobile industry in the month of February is described in the phrase, "bewitched, bothered and bewildered." Never before has it caught so much from so many directions in such a short time. Weather, labor, taxes, materials, prices—given the opportunity, there isn't an executive, in the industry who couldn't write a full-fledged damnation of each.

The materials supply situation is the most worrisome of the lot, being of longer-term concern. Last week's headache included the railroad switchmen's strike which idled in excess of 100,000 in the industry.

Auto, Truck Output

U. S. and Canada

	1951	1950
January	650,545*	609,878
February	.....	505,593
March	.....	610,680
April	.....	585,705
May	.....	732,161
June	.....	897,853
July	.....	746,801
August	.....	842,335
September	.....	760,838
October	.....	795,947
November	....	633,678
December	.....	671,284

Weekly Estimates

Week Ended	1951	1950
Jan. 13	139,679	154,552
Jan. 20	162,485	158,432
Jan. 27	167,809	141,036
Feb. 3	152,721	127,428
Feb. 10	140,000	125,737

Estimates by Ward's Automotive Reports

* Preliminary.

GM was hardest hit with 52,000 idle in 12 plants and 30,000 in nine plants working only part-time. Ford had seven plants down. Nash had closed down its Milwaukee and Kenosha plants. Many other companies were on a day-to-day basis, and will spend weeks trying to build up floats of materials and components.

Kaiser-Frazer, after a 15-day strike brought on by disciplining a worker for fighting with a foreman, was resuming operations. It agreed to submit the union's case against the foreman to arbitration; the union accepted a two-week layoff for the worker.

From an economic standpoint it looked as though the industry's troubles were just beginning. Lacking clarification beyond the broad terms of the price freeze order, used car dealers were screaming that they cannot operate under that kind of a freeze. It's one thing, they say, to set a price on a standard item that is sold every day across the counter. It's an entirely different thing to peg the price of a used car when mileage, physical condition, etc., can be so different. Furthermore, the freeze caught most products at the highest level in history, while used cars are far depressed by the season and by the effects of Regulation W.

Treasury Secretary Snyder's tax proposal was another Sunday punch. Recommending an increase in the manufacturers' excise tax on new cars from 7 to 20 per cent, his suggestion has aroused the ire of labor and management. Union contention has been that Regulation W's st gent terms have already written off the average wage earner. Gu ing in Detroit last week was that higher excise tax would be too m for anyone to swallow. Immed reaction by the public to the prop was a rush to buy cars, although one seriously believes such a st gent tax impost would ever get green light.

"Super 88" Called Back

The "Super 88" body which wa have appeared in the new Oldsmo lineup (STEEL, Feb. 5, p. 61), called back from production too to keep it a secret. In General tors ads in consumers' magazines Super 88 appears. It is also be exhibited in the General Mo building in Detroit. Public introc tion, however, will not be made u next month when, incidentally, present price freeze on new auto biles will have thawed.

New Diesels in the Works

Broad-scale diesel engine deve ment program is under way at Cleveland Diesel Division of Gen Motors, in co-operation with Navy's Bureau of Ships. Involve a completely new design of eng presumably for powering submari requiring extensive engineering w new tooling, increased employm and the like. Division spokesmen say nothing about the activity, cla ing they are tightly muzzled by Navy.

Cleveland Diesel, outgrowth of old Winton Engine plant, was a l hive of manufacturing during last war, when two plants were o ated to turn out large diesel po plants for naval installations. At termination of hostilities, busi skidded. Electromotive Division t over one of the plants, and la numbers of personnel either resig or were released. In some quar there is the hunch expressed t GM top management would like see Cleveland Diesel a little closely tied to production of n engines and more spread out into c mercial fields, at least for the l range.

In recent years, the division had under development at least new types of diesels, one a vert crankshaft design with no camsh injectors being fired by cylinder p sure; the other a closed cycle rangement for submarine installat in which no outside air is requ for operation. It is possible the p ent resurgence of production p ning is tied to these innovations.

Railroad switchmen's work stoppages switch industrial production index from upward movement to a downfall. Materials shortages that will result will be felt for weeks

O"T EXPECT any new industrial ·o uction records in the next few ·ts. The railroad switchmen's ·e and severe winter weather ·e been enough to forestall them. f severe was their impact that ·e not only halted the strong up- ·al movement of STEEL's indus- ·i production index but drove it ·n 9 points in the week ended · 3. That skid put the index down ·211 per cent of the 1936-1939 ·age. Before it toppled, the index ·· reached 220 per cent, only 2 ·ts below the postwar high set · October.

·ut even after the drop the index · ubstantially above the level of ·ar ago. Then it was 188.

·hile the strike and the cold ·ther were immediately reflected ·he drop in the index their effects · not be as quick in disappearing. ·erials and parts that didn't get ·duced will be missed over weeks ·ome as industry tries to meet a · civilian demand at the same time it is taking on an ever-growing defense assignment.

Downfall of Carloadings . . .

Most obvious decline as a result of the switchmen's strike was in railroad freight car loadings. For the week ended Feb. 3, the week in which the work stoppage began, car loadings are estimated by STEEL at 588,000. That contrasts with the preceding week's 784,185, highest recorded since the week ended Nov. 18.

Auto Output Loses Speed . . .

The railway strike immediately applied the brakes on the auto industry's pace. Unable to receive shipments of parts when needed, the auto industry had to cut its output of passenger cars and trucks to 152,721 units in the week ended Feb. 3. It had just got its production up in the week ended Jan. 27 to 167,869 units, highest level since the week ended Dec. 16. But even after the drop, output is higher than that in the comparable week of a year ago when 127,428 passenger cars and trucks were produced.

Truck production this year may closely approach, or possibly even exceed, the alltime record volume of 1,369,000 units made in 1948, says *Ward's Automotive Reports*. The reason? Military orders and high demand for civilian models needed for a defense economy.

Steel Output Hurt Too . . .

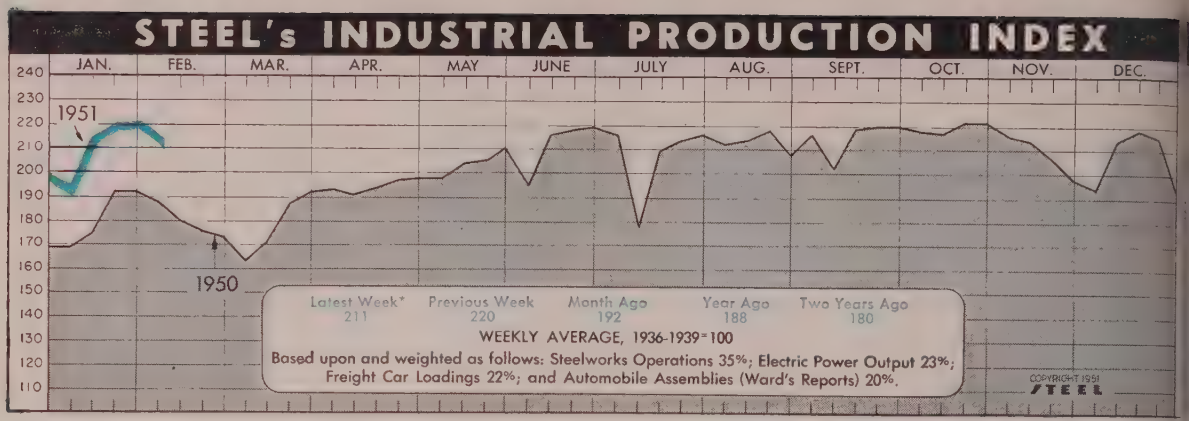
Steel ingot producers were affected by the rail strike to only a minor extent in the week ended Feb. 3 and in that week were able to set a new record of 2,025,000 net tons. But by the week ended Feb. 10 the strike's fangs were beginning to sink in, and the American Iron & Steel Institute expected steel ingot production to slip off to 1,933,100 tons.

Plant Expansion Rolls On . . .

The wave of industrial plant expansion set off by the national mobilization continues to roll forward. In the week ended Feb. 1, contracts

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	101.5	100.0	98.0	94.0
	Electric Power Distributed (million kilowatt hours)	7,099	6,970	6,602	6,062
	Bituminous Coal Production (daily av.—1000 tons)	1,896	1,863	1,569	1,250
	Petroleum Production (daily av.—1000 bbl)	5,938	6,066	5,788	4,945
	Construction Volume (ENR—Unit $1,000,000)	$235.1	$305.3	$154.2	$160.7
	Automobile and Truck Output (Ward's—number units)	152,721	167,869	99,955	127,428
	*Dates on request. †Weekly capacities, net tons: 1951, 1,999,035; 1st half 1950, 1,906,268; 2nd half 1950, 1,928,721.				
TRADE	Freight Car Loadings (unit—1000 cars)	588†	784	662	613
	Business Failures (Dun & Bradstreet, number)	159	193	144	199
	Money in Circulation (in millions of dollars)‡	$27,045	$27,028	$27,685	$26,928
	Department Store Sales (changes from like wk. a yr. ago.)‡	+25%	+31%	+20%	+2%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$16,539	$16,952	$17,923	$13,266
	Federal Gross Debt (billions)	$256.1	$256.0	$256.2	$256.8
	Bond Volume, NYSE (millions)	$25.9	$27.1	$20.9	$22.0
	Stocks Sales, NYSE (thousands of shares)	14,247	12,779	14,351	10,109
	Loans and Investments (billions)†	$70.4	$70.4	$71.8	$67.8
	United States Gov't. Obligations Held (millions)†	$32,443	$32,634	$33,674	$38,077
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	171.92	171.92	171.92	156.13
	STEEL's Nonferrous Metal Price Index‡	262.2	261.0	248.7	159.9
	All Commodities†	180.5	180.0	176.8	151.8
	Metals and Metal Products†	188.7	188.4	187.4	168.9
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
240 230 220 210 200 190 180 170 160 150 140 130 120 110
1951
1950
Latest Week* 211
Previous Week 220
Month Ago 192
Year Ago 188
Two Years Ago 180
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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Week Ended F

awarded for industrial plant construction totaled $128.3 million, equivalent to more than half of that week's $235 million total of engineering construction awards, *Engineering News-Record* reports.

The continuing flood of industrial building contracts rolled up a $507 million total in the first five weeks of this year for a 510 per cent gain over the corresponding period of last year.

Total of heavy construction contracts awarded in the first five weeks of 1951 is $1.5 billion, a 40 per cent gain over the like period of last year. Private construction, pushed up to $838.8 million by the heavy industrial awards, is 62 per cent higher than last year. Public works at $663 million are up 19 per cent.

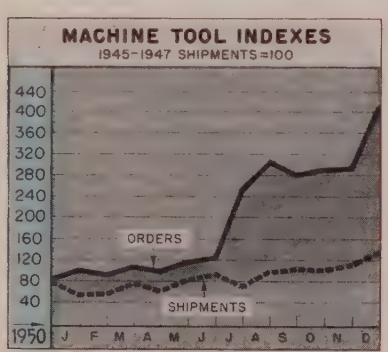
Construction Booming . . .

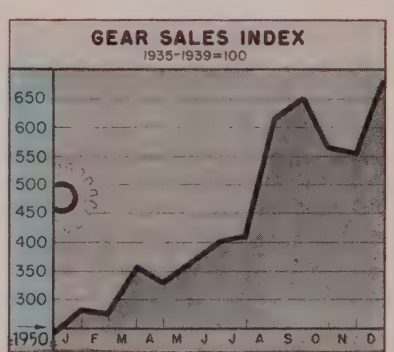
Construction activity in January was one-fifth higher than in the corresponding month a year ago, reports the U. S. Departments of Commerce and Labor. Total value of new construction put into place was almost $2.1 billion. Privately-financed construction put into place in January was valued at more than $1.5 billion; new homebuilding which continued at record levels for this season of year accounted for more than hal the total private outlays for construction.

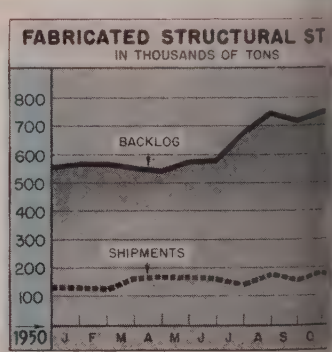
Public expenditures for new struction during January amour to about $500 million.

Fewer Lay-Offs . . .

Although lay-offs due to mater and parts shortages may result f the rail switchmen's strike, they w declining in January. They rose, s the U. S. Department of Labor, 23,900 in the week ended Jan. 6 declined sharply since then. L


MACHINE TOOL INDEXES
1945-1947 SHIPMENTS=100
440 400 360 320 280 240 200 160 120 80 40
ORDERS
SHIPMENTS
1950 J F M A M J J A S O N D





Machine Tool Indexes

	New Orders		Shipments	
	1950	1949	1950	1949
Jan.	99.7	87.0	52.8	68.8
Feb.	89.2	80.9	56.1	70.3
Mar.	107.4	93.5	75.3	75.8
Apr.	98.9	70.1	61.6	74.7
May	116.4	63.7	82.5	72.8
June	124.1	53.6	91.9	79.0
July	253.1	48.0	68.3	60.7
Aug.	305.1	51.5	95.7	67.3
Sept.	280.6	57.7	101.6	67.6
Oct.	289.6	56.8	100.9	62.3
Nov.	291.9	84.3	110.9	67.6
Dec.	410.1	82.5	135.7	75.7

National Machine Tool Builders' Asso.

Gear Sales Index

1935—1939=100

	1950	1949	1948
January	280.2	320.7	346.8
February	272.9	282.3	324.4
March	358.4	299.1	389.8
April	328.6	339.0	320.9
May	363.1	250.1	283.6
June	401.0	227.8	324.1
July	410.7	193.1	384.4
August	617.4	262.0	335.6
September	654.5	224.9	320.4
October	564.8	242.3	333.3
November	554.9	230.7	309.0
December	680.4	242.8	325.9

American Gear Mfrs. Association

Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlo	
	1950	1949	1950	19
Jan.	135.2	152.7	565	
Feb.	129.6	145.9	565	
Mar.	156.8	185.9	556	
Apr.	164.4	179.2	540	
May	168.1	171.1	578	
June	172.1	172.3	580	
July	141.6	148.0	684	
Aug.	180.7	183.9	741	
Sept.	157.0	162.1	716	
Oct.	183.3	99.8	747	
Nov.	167.1	117.2	763	
Dec.	175.6	135.5	736	
Total	1,931.5	1,853.5		

American Institute of Steel Construct

Charts—Copyright 1951, St

esulting from materials short- dropped to 12,800 in the week Jan. 13 and to 4600 in the week Jan. 20.

Index Still Goes Up . . .

government's Jan. 26 freeze ices wasn't enough to put the nment's wholesale price index e. The index was as active as and in the week ended Jan. 30 another new alltime high by ing to 180.5 per cent of the average. That was a rise of half nt over the preceding week, and oints over a year ago.

tinued climb of the index is le because some commodities services are exempted from the freeze.

und Buy . . .

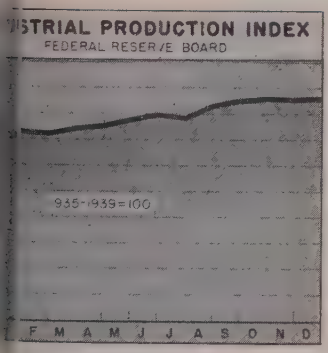
ce freezing hasn't been enough courage large-scale buying. Con- r purchasing, for instance, ed department store sales in week ended Jan. 27 to 25 per cent above the dollar volume of the corresponding week of last year. Consumers are hedging against feared shortages of merchandise and higher taxes on many items.

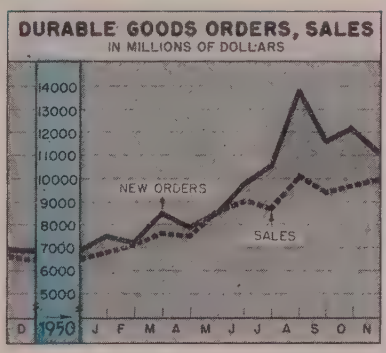
Trends Fore and Aft . . .

Sales of television picture tubes to receiver manufacturers in 1950 amounted to 7,473,614 units valued at $198,737,428, compared with 3,305,673 tubes valued at $92,402,520 in 1949 . . . Radio receiving tube sales jumped 93 per cent and totaled 383,960,599 tubes in 1950, compared with 198,753,295 in 1949 . . . Industrial furnace sales in 1950 were valued at $53,433,079, compared with only $16,658,600 in 1949 . . . Kropp Forge Co., Chicago, has 42 per cent of its total production on war orders, and its order backlog is $9 million after climbing from $8,750,000 in mid-January . . . If your income hasn't doubled in the last ten years you haven't kept up with inflation, a report by the National Industrial Conference Board shows.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

onstruction Feb.5	Malleable Cast. Feb.5	Refrigerators Jan.15
mploy., Steel Jan.29	Metalwkg. Employ..Jan.8	Steel Castings Jan.29
oundry Equip. Jan.29	Price Indexes Jan.22	Steel Forgings Jan.29
reight Cars Jan.22	Pumps, New Orders.Feb.5	Steel Shipments Dec.25
urnaces, Indus. ...Jan.22	Purchasing Power...Feb.5	Vacuum Cleaners ..Jan.15
urnaces, W. Air...Jan.22	Radio, TV Aug.14	Wages, Metalwkg. .Jan.29
ray Iron Castings..Jan.8	Ranges, Elec. Feb.5	Washers Jan.15
oners Jan.15	Ranges, Gas Dec.4	Water Heaters Dec.25





ıdustrial Production Index

	Total Production		Iron, Steel		Non-ferrous	
	1950	1949	1950	1949	1950	1949
..	183	191	203	228	180	184
..	180	189	201	232	190	185
.	187	184	205	233	200	183
..	190	179	222	219	198	168
..	195	174	226	204	197	145
.	199	169	231	177	207	132
..	196	161	228	156	202	128
.	209	170	236	178	212	141
.	211	174	245	179	216	157
..	217	166	253	103	223	164
.	215	173	247	144	226	163
..	216	179	253	198	226	165
.	200	176	229	187	206	160

ral Reserve Board

Durable Goods Orders, Sales

In Millions of Dollars

	New Orders		Sales*	
	1950	1949	1950	1949
Jan.	7,479	6,370	6,817	7,120
Feb.	7,213	6,336	7,103	7,290
Mar. ...	8,508	6,840	7,643	7,372
Apr.	7,857	5,725	7,488	7,029
May	8,514	5,356	8,605	6,901
June	9,814	5,981	9,030	7,154
July	10,553	5,622	8,670	6,671
Aug.	13,863	6,831	10,060	7,387
Sept. ...	11,500	7,099	9,392	7,335
Oct.	12,171	6,892	9,671	6,167
Nov. ...	11,056	6,941	9,909	6,631
Dec.	....	6,923	....	6,516

* Seasonally adjusted. U. S. Office of Business Economics

How Vapor Stops Rust

For Exporter of Rolling Mill Parts

Slushing Costs Eliminated! Packaging Time Slashed!

WITH

Angier VPI* Wrap

This amazing box liner does it!

Inside these overseas-bound crates the chemical coating on Angier VPI Wrap slowly releases an invisible vapor. It permeates the area around these rolling mill parts . . . prevents rust almost like magic! So effective is this proven vapor rust preventive that rejects due to rust are eliminated. Slushing in grease or oil is not necessary — this means "cleaning" costs for customers are eliminated! Substantial savings in packaging time for VPI-users is an obvious fact!

For facts that tell how *you* can ship and store metal articles or parts RUST-FREE at less cost . . . write today to:

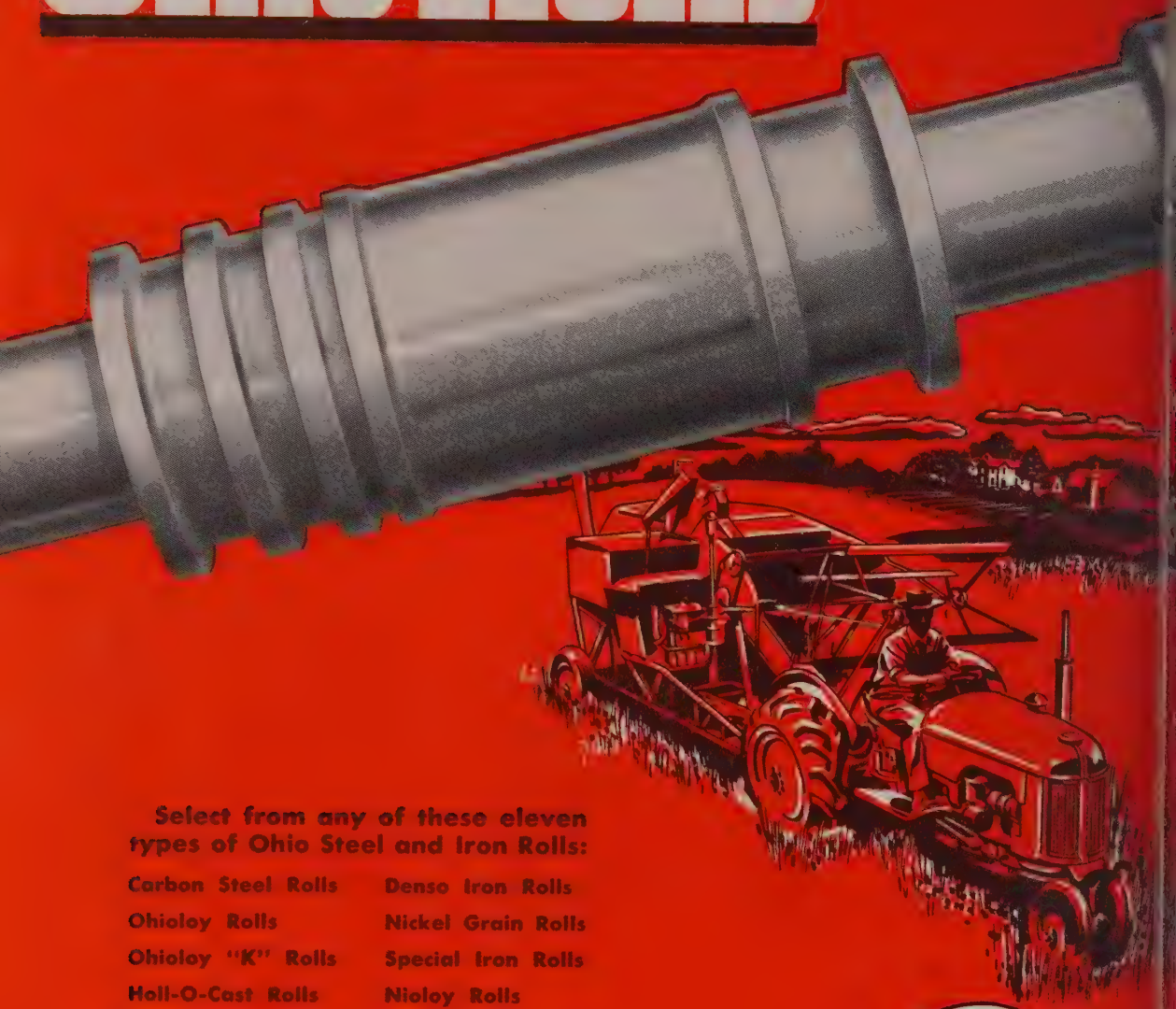
*Reg. U. S. Pat. Off. Vapor rust preventive

Angier CORPORATION
Framingham 8, Mass.
Industrial Packaging Engineers since 1895
Representatives and Distributors in Principal Cities

Angier Corp., Framingham 8, Mass.
Yes Send case studies of your revolutionary vapor rust preventive TO:

Shaping Metal for all Industry

Ohio Rolls



Select from any of these eleven types of Ohio Steel and Iron Rolls:

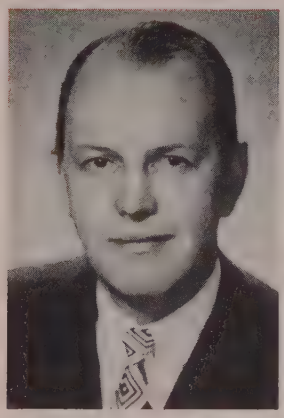
Carbon Steel Rolls	Denso Iron Rolls
Ohioloy Rolls	Nickel Grain Rolls
Ohioloy "K" Rolls	Special Iron Rolls
Holl-O-Cast Rolls	Nioloy Rolls
Chilled Iron Rolls	Flintuff Rolls
Alloy Chilled Iron Rolls	

THE OHIO STEEL FOUNDRY COMPAN

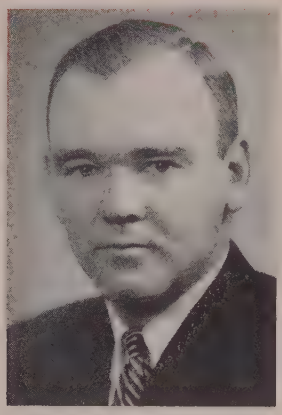
LIMA, OHIO • Plants at Lima and Springfield, O

Men of Industry

ALBERT J. BOLD
. . . exec. V. P., Superior Metal Fabricating



OSCAR L. OLSON
. . . Swedish Crucible president and gen. mgr.



E. R. WALSH III
. . . gen. sales mgr. at Alloy Rods

ert J. Bold was elected executive e president, **Superior Metal Fabating Co.,** Niles, O. He served as perintendent of National Gypsum 's plant in Niles. Superior Metal, new company, will do coil and sheet el slitting, job shearing, punch ess and cold rolled forming fabrition.

orge Tarbox was appointed assistt to the superintendent, major alrs division, Electro Metallurgical vision, **Union Carbide & Carbon rp.,** Niagara Falls, N. Y.

heem Mfg. Co., Richmond, Calif., s formed an aircraft department be headed by **Laurence H. Cooper,** cently vice president and general anager, Pacific Airmotive Corp. A -acre site near the Rheem plant South Gate, Calif., has been purased, and a contract let for a buildg specially designed to handle airaft work.

ale & Towne Mfg. Co., Philadelphia, pointed **Albert A. Goodman** manger of quality control, Philadelphia vision, and **Edwin J. Heimer** as les manager of hand lift and morized hand trucks, same division, succeed **W. Glen Tipton,** who res Mar. 1.

L. Hiers was appointed assistant eneral manager, **Woodhouse Chain Vorks,** Round Associate Chain Co., renton, N. J.

hur Schmidt was appointed assistnt to the president, Ingersoll Prodcts Division, **Borg-Warner Corp.,** Chicago. He was general manager, Highway Steel Products Co.

Swedish Crucible Steel Co., Detroit, elected **Oscar L. Olson** as president and general manager to succeed his father, the late **Nels L. Olson,** who established the business 41 years ago. Since 1942 the new president has been general manager of the company's plastic division.

Jones & Laughlin Steel Corp., Pittsburgh, appointed **Clem W. Gottschalk** as assistant vice president in charge of traffic. Since 1941 he has been general traffic manager, a position he retains.

Harold G. Lolley joined **Rosedale Foundry & Machine Co.,** Pittsburgh, as foundry superintendent. He had been with Bucyrus Erie Co., where since 1946 he was iron foundry superintendent and metallurgist.

Edgar H. Betts was elected chairman of the board of **W. & L. E. Gurley,** Troy, N. Y. **Charles E. Smart** was re-elected to a new term as president. **Robert G. Betts,** former treasurer, was elected vice president and treasurer. **Lester C. Higbee,** general sales manager and director of engineering, retains the position of secretary.

Herbert L. Schultz was appointed plant manager, **Mid-West Abrasive Co.'s** new abrasive grain plant, Owosso, Mich.

New division heads appointed to the automotive and aircraft engineering departments of **Kaiser-Frazer Corp.,** Willow Run, Mich., include: **George C. Harbert,** named chief engineer in charge of automotive, and **Ralph H. Isbrandt,** appointed chief engineer in charge of aircraft.

E. R. Walsh III was appointed general sales manager, **Alloy Rods Co.,** York, Pa. He has been with the company for several years as district sales manager.

Peyton S. Hopkins was named to manage the Washington office of **Rust Engineering Co.** He succeeds **Richard E. Butler,** retired.

R. K. Laurin was appointed assistant advertising manager, meter and valve division, **Rockwell Mfg. Co.,** Pittsburgh.

Douglas E. Thompson was appointed manager of by-products sales by **Budd Co.,** Philadelphia. His headquarters are at the Hunting Park plant, Philadelphia.

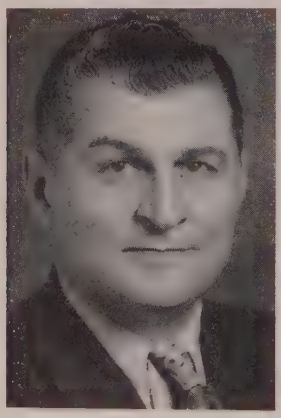
Fielder Israel was named assistant to the president, **General Dry Batteries Inc.,** Cleveland. He resigned last fall as vice president-production, National Carbon Division, Union Carbide & Carbon Corp., with which he was associated 27 years.

Frederick G. Riedel was appointed chief engineer, **United States Air Conditioning Corp.,** Minneapolis. He formerly was chief engineer and works director of research at the Holyoke Works, Worthington Pump & Machinery Corp.

Mercury Mfg. Co., Chicago, appointed **E. B. Forslund** manager of the New York sales office to replace **Conrad Hibbeler,** retired. **H. G. Hemberg** succeeds Mr. Forslund as manager of the Philadelphia sales office. **A. E. Radcliffe,** Cleveland manager, was

transferred to the factory office at Chicago where he is assistant to the general sales manager. He is succeeded at Cleveland by **Melville F. Hoff.**

C. L. Fix was named works manager



C. L. FIX
. . . works mgr., Mullins Liberty plant

of **Mullins Mfg. Corp.'s** Liberty plant at Warren, O., which will make shells for the Army. Mr. Fix joined Mullins in 1950 as director of quality.

H. B. Ives Co., New Haven, Conn., appointed **Eric Wilkinson** as a specialist in war procurement business.

Robert M. Critchfield, former factory manager, Delco-Remy Division, **General Motors Corp.,** was appointed assistant general manager of GM's Allison Division in Indianapolis. **A. C. Stanley,** plant superintendent of the Delco Battery plant in New Brunswick, N. J., was named manager of the plant succeeding **E. E. Ward,** transferred to the Fabricast Division at Bedford, Ind., where he will serve as administrative assistant to the general manager of that division. Succeeding Mr. Stanley as plant superintendent is **George P. Dick,** while **F. E. Jones** becomes chief inspector. **W. A. Brunsted,** personnel manager for the Delco plant, joined the labor relations staff of Delco-Remy Division, Anderson, Ind., and is succeeded by **L. M. Hirsch.**

Philip D. Moore was appointed manager of employee and community relations, **Carboloy Co. Inc.,** Detroit.

Tumb-L-Matic Inc., Bronx, N. Y., appointed **Richard T. Barnes** West Coast representative. He operates out of San Francisco, with a mail address of P. O. Box 227.

John W. Willard was appointed sales training manager and director of personnel for **Lamson Corp.,** Syracuse, N. Y.

Sales representatives appointed by **Rigidized Metals Corp.,** Buffalo, include: **Robert J. Wagner** covering the West Coast, Washington, Oregon and California; **Disque Steel Products Co.,** covering Indiana; and **Adler Steel Products Co.,** covering Minnesota.

Charles H. Merbitz was appointed sales representative, type metal department, Federated Metals Division, **American Smelting & Refining Co.** He will have headquarters at Federated's Philadelphia sales office in the Lincoln-Liberty building.

Henry E. Warren Jr. was appointed assistant general superintendent, and **Forest J. Smith,** assistant to general superintendent of the new Fairless Works of **United States Steel Co.** to

HENRY E. WARREN JR.
. . . asst. gen. supt., new Fairless Works

be built at Morrisville, Pa. **Robert O. Thomas** succeeds Mr. Warren as open-hearth division superintendent at Homestead District Works, and **John W. Price Jr.** was named assistant to general superintendent. Other Homestead appointments include **William E. Crouch Jr.** as superintendent, slabbing and plate division, and **John V. Dorman,** superintendent, fuel and power division.

Edward Valves Inc., East Chicago, Ind., appointed **Bruce K. Stabelfeldt** advertising and sales promotion manager. He was advertising manager, Blackhawk Mfg. Co.

H. C. Buckingham, vice president, **Thor Corp.,** Chicago, was appointed to direct the firm's defense production.

Three sales representatives, all mechanical engineers, newly named to

Allis-Chalmers Mfg. Co.'s gener machinery division offices in t South are: **John P. McLaney** a **Webster C. English,** assigned to t Charlotte, Va., district office; a **Andrew J. Beall Jr.,** named to t New Orleans office. Assigned to t Chicago and Duluth district office respectively, are **John R. Cooper** a **Thomas M. Franey.**

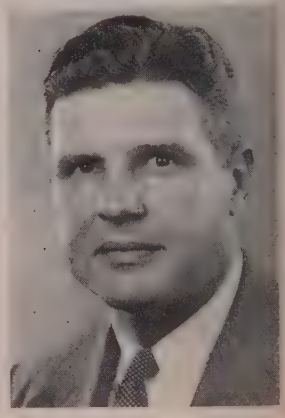
Metals Disintegrating Co. Inc., Eliz beth, N. J., promoted **John A. McKi ley** to supervisor of pigment sales.

DeWalt Inc., Lancaster, Pa., a pointed **O. Stanley Swandahl** distri manager for Lake county, Illino and various trading areas of Wisco sin.

N. H. Balaam, northern Californi district sales manager, **Kaiser Ste Corp.,** Oakland, Calif., was tran ferred to Washington to manage th company's recently opened office there. Temporary headquarters in th Ring building will be vacated abou Mar. 1 and offices established in th Cafritz building. **C. F. Cooper** was as signed as acting district sales man ager, northern California.

Trumbull Electric Mfg. Co., Plain ville, Conn., appointed **Charles Ban gert Jr.** manager of engineering, an **J. J. Pascher** New York district sale manager.

John W. Oehler was named sale manager, engineering works divisio **Dravo Corp.,** Pittsburgh. He joine



JOHN W. OEHLER
. . . Dravo sales mgr., engineering works di

the corporation in 1946 and has sinc been a member of the sales engineer ing staff.

David C. Prince, vice president, **Gen eral Electric Co.,** Schenectady, N. Y. was named to the president's staff

h special duties as assigned. **rry A. Winne,** vice president-engi- ring policy, was assigned respon- lity formerly held by Mr. Prince the GE general laboratory. **Ernest Johnson** was appointed to the vly created post of general man- er of the laboratory. All three n continue headquarters in Sche- tady. **Mark K. Howlett,** chemical partment, was appointed silicone es supervisor with headquarters at terford, N. Y. **Emil R. Schaeffer** comes manager-manufacturing, itchgear divisions, Philadelphia.

rroll V. Roseberry was appointed nager, central station department, **estinghouse Electric Co.,** Pittsburgh, succeed **R. S. Kersh,** named man- er of the company's steam division, ster, Pa. **L. D. Rigdon,** formerly nager of the headquarters manu- turing department, was named as- tant to vice president in charge of nufacturing, and **C. G. Wallis** was med to succeed Mr. Rigdon. **W. G. ller** was appointed manager of nufacturing for the motor and ntrol division, Buffalo. **Roger W. ering** was named supervisor of nt engineering, lamp division, loomfield, N. J. **Clarence Lynn** was pointed engineering manager, mic power division, Pittsburgh, d **William L. Budge** will manage ilities near Idaho Falls, Idaho, for e division.

. Bruce S. Old was elected vice esident of **Arthur D. Little Inc.,** mbridge, Mass. With the company ice 1946, he was in charge of proc- s metallurgy, and has been a direc- since 1949.

ilson S. Dobbin was appointed sales nager, **H. J. Sommers Inc.,** De- it.

CHESTER F. DELBRIDGE
. . . gen. sales mgr., K-G Equipment

Chester F. Delbridge was appointed general sales manager of **K-G Equipment Co. Inc.,** new name of K-G Welding & Cutting Co. Inc., New York. Mr. Delbridge's office is at 50 Broadway, New York 4, the executive sales office of the company. The factory address on 29th street is unchanged. Mr. Delbridge joined K-G, a unit of Air Products Inc., six months ago.

Donald Patterson, production control manager, **National Motor Bearing Co. Inc.,** Redwood City, Calif., was promoted to factory manager succeeding **Col. B. W. Holmes,** recalled to active service in the Air Force.

J. Truman Stone was appointed sales promotion manager, Kelvinator Division, **Nash-Kelvinator Corp.,** Detroit.

Ivar G. Blackberg was appointed chief purchasing agent, radio and television division, **Stewart-Warner Corp.,** Chicago. The division has moved to 1300 N. Kostner Ave.

DELMAR WOODHOUSE
. . . Kropp Forge secretary

Delmar Woodhouse was elected secretary of **Kropp Forge Co.,** Chicago, which he joined in 1943. For the last four years he has been controller, which position he continues to hold.

F. O. Dutton joined the staff of **Bendix Home Appliances,** division of Avco Mfg. Corp., South Bend, Ind., and will serve as assistant to the director of purchases.

Cold Metal Products Co., Youngstown, appointed **W. C. Thompson** Cleveland district sales manager.

R. C. Patterson was elected vice president, **Geneva Metal Wheel Co.,** Geneva, O.

Link-Belt Co., Chicago, appointed **Orvin K. Gaskins** manager of aircraft and assigned sales for its Ewart plant in Indianapolis.

Joseph W. S. Davis was appointed assistant to the vice president, eastern regional sales, **American Locomotive Co.,** New York.

BITUARIES...

lward L. Holljes, 66, general sales anager, **William Sellers Co.,** a di- sion of Consolidated Machine Tool rp., Philadelphia, died Feb. 3.

exander W. MacLean, 61, vice presi- ent and sales manager, **MacLean- gg Lock Nut Co.,** Chicago, died n. 28.

e C. Bock, 58, general purchasing gent, **Gulf Oil Corp.,** Pittsburgh, ed Feb. 3.

hn M. Watson, 94, one of the unders of Pennsylvania Engineering Co., New Castle, Pa., and general manager of that plant for a number of years, died Feb. 2. He later joined in forming **Canonsburg Steel & Iron Works,** Canonsburg, Pa., where he remained for 30 years as vice president and general business manager. He retired from this firm at the age of 72 years, and returned to New Castle.

George J. Blum, 81, president, **Armstrong-Blum Mfg. Co.,** Chicago, died Jan. 10.

Ralph A. Shaffer, 72, who retired in 1940 as general sales manager, **Simonds Saw & Steel Co.,** Fitchburg, Mass., died Jan. 6. He was with the company for nearly half a century.

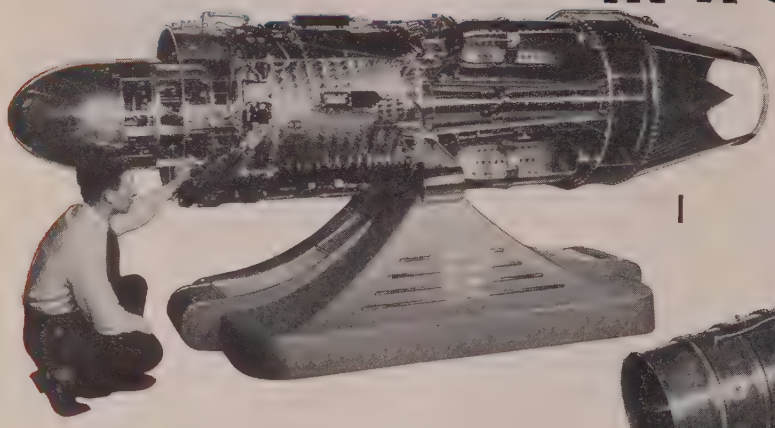
Avery D. Byler, 67, former president of **Edison General Electric Co.,** now Hotpoint Inc., Chicago, died Jan. 27.

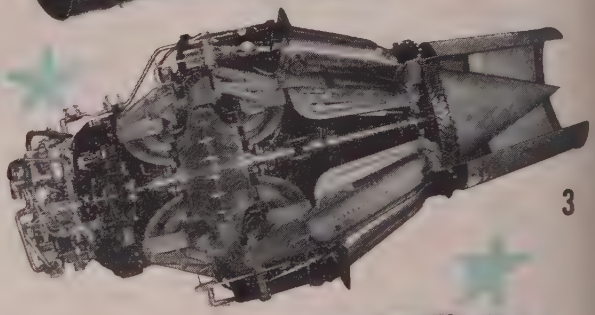
Willard N. Lynch, president, **Keystone Drawn Steel Co.,** Spring City, Pa., died Jan. 25.

Charles A. Sullivan, 82, until retirement seven years ago in charge of traffic for **Fisher Body,** General Motors Corp., Detroit, died Jan. 31.

Albert T. Potter, 65, until retirement last September chief engineer, **Ainsworth Mfg. Co.,** Detroit, died Feb. 1.

RINGS THAT GO IN A STRAIGHT LINE





Since the inception of jet aircraft engines, American Welding has been closely associated with leading jet engine manufacturers*. Welded stainless steel rings that stand the gaff of supersonic speeds travel through our production lines — *fast!*

In addition to jet rings, we form, weld, heat-treat and machine a wide variety of rings, bands and assemblies to exact specifications, from both ferrous and non-ferrous metals.

Whatever your requirements, we can apply this same skill to your products. Send in your prints and quantities for prompt quotation, and be sure to ask for our illustrated booklet which will acquaint you with our company, our facilities and many of the products we furnish.

*1 — GENERAL ELECTRIC — J47
2 — PRATT & WHITNEY — J42
3 — ALLISON — J33
4 — WESTINGHOUSE — J34

THE AMERICAN WELDING & MANUFACTURING CO. • WARREN, OHIO

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Production and Engineering NEWS AT A GLANCE

FILE FOR THE FUTURE— A 90-6-4 mixture of tungsten, nickel and copper powders, manufactured by Carboloy Co. under the trade name Hevimet, is seen as having significant possibilities by virtue of its 50 per cent greater density than lead in such parts as balance weights on crankshafts, gyroscopes, variable-pitch propellers, centrifugal clutches and similar moving parts. High density enhances the resistance to penetration of radioactive rays and suggests uses such as gamma ray screens for radiotherapy. Hevimet has minimum density of about 17 grams per cubic centimeter, has tensile properties comparable with those of most nonferrous metals and alloys, is readily machinable but somewhat difficult to thread. In production of parts the powders are ball milled, pressed into approximate final shape and then sintered in a reducing atmosphere. Welding or silver solder brazing can be used in fabrication of complex shapes, and plating with cadmium, chromium or nickel is possible.

HEAT TREAT STRESSES EASED— Interrupted quenching of gears and other transmission parts, ranging in weight from 8 ounces to 12 pounds, in mass production quantities, has eliminated (p. 73) the use of quenching presses, plugs and special fixtures, at the same time providing parts with double or triple the service life and 15-20 per cent better load-carrying capacity. A typical gear of 4820-H steel, carburized at 1700° F, is quenched in oil at 400° F, cooled for 4 hours at room temperature, washed and tempered at 300° F for 90 minutes, yielding a fine martensitic case structure with Rockwell C hardness of better than 60 on the surface of the teeth.

PRESERVATIVES FOR PACKAGING— Vapor phase inhibitors (VPI) are now being used by Ordnance for the preservation of weapons awaiting issue. They replace cosmoline, a thick coating used on many firearms during World War I and requiring boiling water, solvents and plenty of muscle to remove. VPI materials are of various types, one being dicyclohexylamine nitrite, patented by the Shell Development Co. A box of ten rifles packed in VPI wrappings can be unpacked with rifles prepared for use in 35 minutes. Extensive use of VPI materials has been made in many types of industrial packaging applications. They are suitable only on ferrous metals and when storage is involved a light oil coating should be applied first as a preservative.

COMPLEX SHELLS PLATED— Where you need a thin, intricately shaped metal shell, produced without machining or press operations, electroforming provides an efficient fabricating method. A variety of metals—nickel, copper, silver, even iron—can be electroplated over mandrels, either of the permanent or one-shot type, the latter being melted or dissolved out of the plated shell and then reused. Unique variant of the process (p. 77) is electroforming of metal screen.

BLOCK BOTTOM— Taking their cue from carbon block hearths now widely used in blast furnaces, two experienced open-hearth operators have worked out a system (p. 82) for building up open-hearth bottoms or subhearths by fitting together large carefully machined blocks with joints staggered for extra protection. Block cross section is on the order of 15 x 28 inches, and lengths 12-18 feet, or sufficient to span the hearth. They are set on a layer of insulation and are covered by conventional cold-rammed magnesite to form the normal contour of the bottom and banks.

BENDING IS SMOOTHER—To reduce friction and minimize galling on the slide blocks of a new tube bender, an overlay of bronze ¼-inch thick was applied to the gibs on the slide blocks for both clamping jaws and forming die. The machine is designed to bend tubing from 1-inch 18-gage to 4-inch 12-gage and is fully automatic plus being capable of bending radii on both round and flat tubing. The overlay was applied by using 3/16-inch electrodes for a build-up of ¼-inch, 25 pounds of electrodes being required to cover the two ways on each block. Welding time on each piece was about 10 hours and thickness of the overlay after machining was ⅛-inch. Friction, of course, is reduced because of the dissimilar metals involved, bronze working against hardened steel.

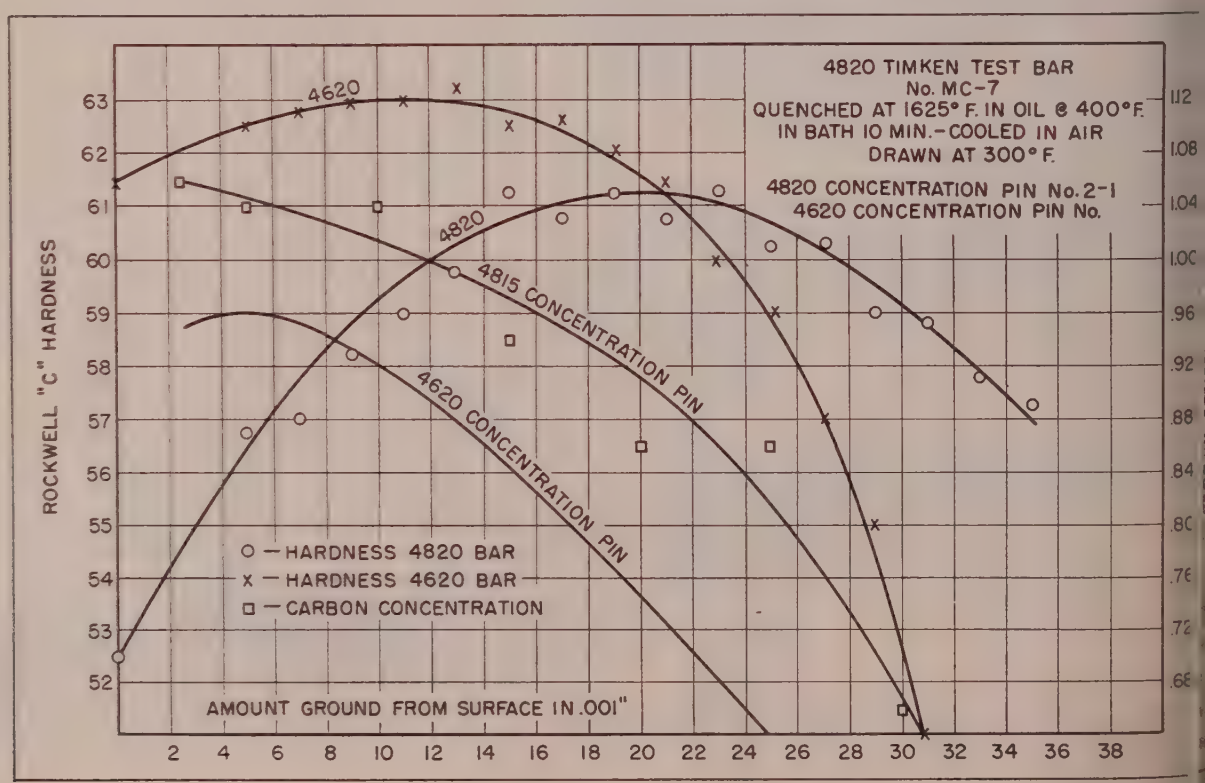
—*A.H.A.*

Fig. 1 (above)—Tray of transmission countershafts ready to enter the marquench bath. These parts were formerly quenched individually

Fig. 2 (above)—Photomicrograph taken from a toot of first speed countershaft gear carburized at 1700° and quenched in 400°F oil. After cooling for hours to room temperature, the gear was washe and tempered at 300°F for 1½ hours

Fig. 3 (below)—Photomicrograph of a conventionall quenched gear shown for comparison of structure

Fig. 4 (below)—Study of pins prepared for the com parison of concentration and hardness. Chart show the 4620-H pin at the maximum of Rockwell C wit a concentration of 0.88 per cent; the 4820-H, 4815- pins show maximum Rockwell C 61 at a concentratio of 0.90 per cent



ASS MARQUENCHING

Speeds Gear Output

By W. B. CHENEY
Assistant Works Metallurgist
and
W. C. HIATT
Assistant General Foreman, Heat Treat
International Harvester Co.
Ft. Wayne, Ind.

SIBILITIES of mass marquenching are being ex- ed by International Harvester Co. in its $1 mil- rearranged and modernized heat treating facil- at the Ft. Wayne Works. Five radiant tube gas urizers are used to mass marquench transmission s, differential side gears, side pinion gears, king and miscellaneous shafts.

arquenching is a coined word for a process that a type of interrupted quench. Since oil is used uenching medium at 400° F, temperature is not sted to M_s point for types of steel processed. actors governing this process are furnace temper- e, carbon concentration, agitation of quenching ium, time cycle in quenching medium and trans- nation period. These factors properly controlled lt in a superior product due to less quenching sses and distortion. Some of the results: More uction; elimination of dies and of plugs for ed bores; no individual handling; greater alloy increased load-carrying capacity and longer life ars due to less residual stress.

ariables Closely Controlled—Development work on process was conducted on a Quench-Master, a ble machine that permits close control of the ching medium and of the many variables in agi- n. It was found that we were able to quench s within specified tolerances, eliminating the use of quenching presses, plugs and special fixtures.

From our findings on individually handled parts in this machine, it was realized that mass quenching had possibilities if agitation and tank design could be improved. With this in view, a special study of tank design and agitation was conducted which resulted in our present technique.

Marquenching produced gears with a minimum of residual stress, thereby increasing their service life from 100 to 200 per cent and increasing the load-carrying capacity from 15 to 20 per cent as determined by dynamometer testing.

Transmission gears and parts were released for production on December 7, 1948. Since that time other parts have been studied, tested and released for production. There are approximately 75 different parts being processed which range in weight from ½ to 12 pounds, with solid sections from ½ to 2½ inches. This variation in weight, size and design of parts presented numerous problems to establish proper quenching as well as an economical production flow.

Furnace Atmosphere and Cycle—The process is in operation on five radiant tube carburizers. These furnaces are the two-row continuous type, containing 21 trays per row on which the work is automatically charged into the furnace.

The atmosphere in these furnaces consists of RX

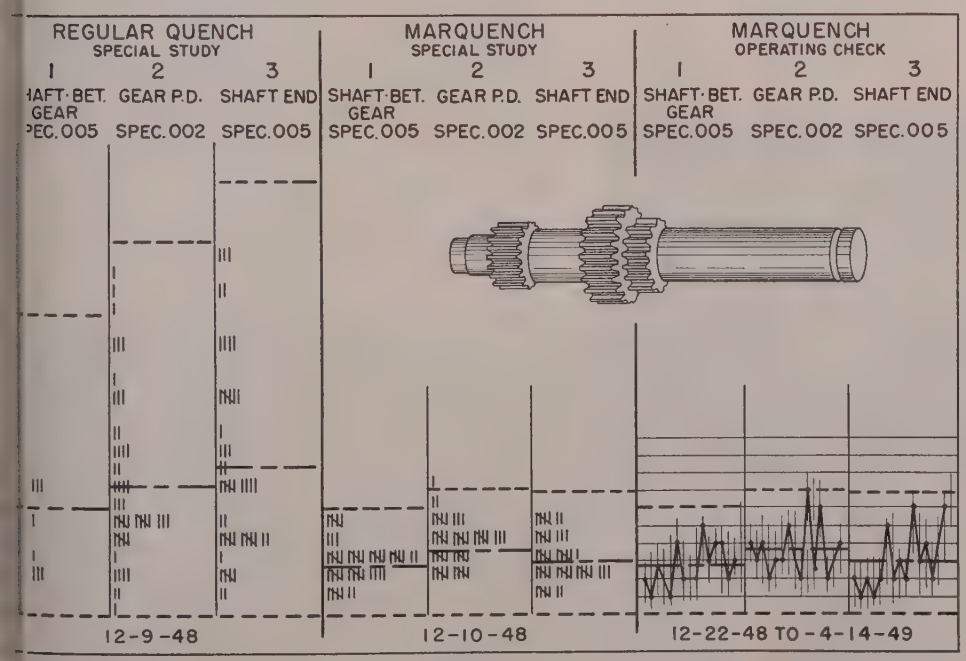


Fig. 5 — Transmission countershaft distortion comparison between the conventional and marquenched taken at three points on the steel shaft

gas as a carrier and 1050 Btu as an activator. Our ratio in relation to this process is 1250 cu ft RX to 35 cu ft of natural which changes approximately 1.3 times per hour. The atmosphere is checked regularly and plotted on quality control charts. Another interesting phase of this process and close atmosphere control is the increase in alloy life. We now have very light trays which have in excess of 8000 hours.

Furnaces are operated in cycle according to one of three specified case depths: 0.025-0.035, 0.031-0.047, or 0.047-0.063-inch.

Carbon Concentrated—This close control results in the concentration of carbon which we consider optimum for hardness and structure, believing that better load-carrying and wearing characteristics were obtained. Former practice was to hold the carbon concentration in the range of 1.10 to 1.20 per cent on all types of carburized parts. However, an extensive study was conducted on hardness, wear and structure, which proved that a lower concentration is desirable. Fig. 4 shows a study of pins prepared for the comparison of concentration and hardness. Seven cuts, 0.0015-inch on a side, were taken to arrive at t concentration curves, while the hardened pins we wet ground in 0.002-inch steps to arrive at the Roc well C hardness. It will be noted that the cha shows the 4620-H pin at the maximum of Rockw C 63 with a concentration of 0.88 per cent and t 4820-H, 4815-H pins show maximum Rockw C 61 at a concentration of 0.90 per cent. We are a tempting to hold furnace concentration between 0. and 0.95 per cent.

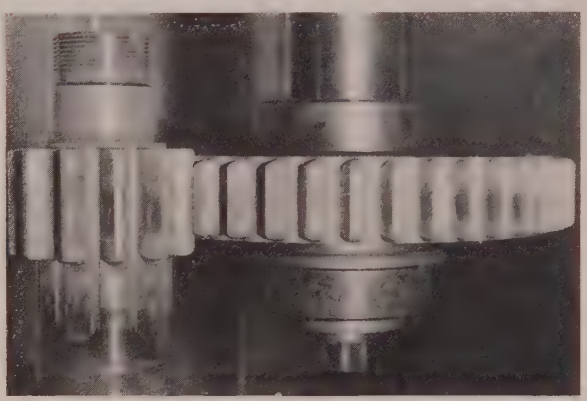


Fig. 6 — Marquenched countershaft showing tooth bearing; rolled on gear speeder against green first speed gear

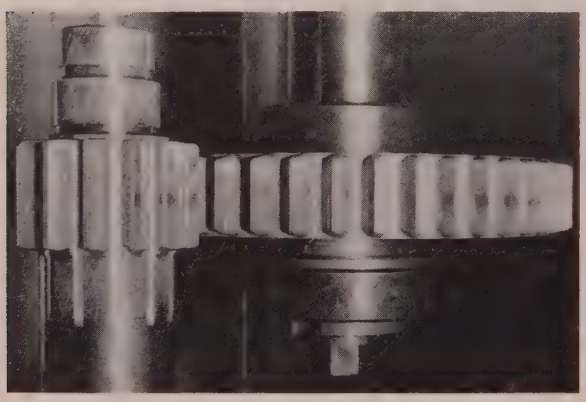


Fig. 7—Marquenched first speed gear showing tooth bearing; rolled on gear speeder against green countershaft gear; the first speed gear is crown shaved. Before marquenching the countershaft gear was individually tube quenched and the sliding gear die quenched

1600-Gallon Quench Tank—The 1600-gallon Ha vester-designed quench tank is located directly und the side discharge door so that the material di charged to the Lowerator is submerged into the 400° oil. The tank is designed so that the flow of oil greatest at the submerged work level. Work on t Lowerator is automatically time quenched.

The oil bath is held at 400° F ±2° F by six radia tubes which may heat or cool as required. A stu was made as to the best location of the thermocou to control the bath, and it was found that direct beneath the submerged work level gave the close co trol desired.

When the work returns from the oil, it is remov from the Lowerator to a roller conveyor where it transferred to mesh baskets. Parts are held in t baskets until the transformation is completed befc washing and tempering. This phase prevents a pr lem as some parts require as much as 5 hours completion of the transformation. Therefore, th is a bank of material between furnace and washer.

When sufficient time has elapsed for the tra formation, the baskets are placed on a power-driv roller conveyor that passes through the wash a temper units. All marquenched parts are temper 1½ hours at 300° F. The conveyor is extended beyo the temper unit for 30 feet to allow the parts to c and to be inspected.

Case Structure Martensitic—A fine martensitic c structure is obtained by this process. The pho micrograph, Fig. 2, is taken from a tooth of fi speed countershaft gear carburized at 1700° F a quenched in 400° F oil. After cooling for 4 hours room temperature, the gear was washed and tempe at 300° F for 1½ hours. This gear is made fr 4820-H material with the following analysis: Carl 0.21, manganese 0.76, nickel 3.45, chromium 0. silicon 0.23, and molybdenum 0.25. Hardness on surface of the teeth was Rockwell C 60.5 with core hardness at the pitch line, root line, and ⅛-i below the root, 43, 38, 38 respectively. A pho micrograph of a conventionally quenched gear shown for comparison of structure, Fig. 3.

Distortion and Quality Control—Throughout study and development of the process, quality con has been an indispensable method in releasing pa for production. The benefit from this process is in correcting errors in tolerances, but rather in h ing stress to a minimum. In establishing this pi ess on different parts, samples were checked in green and spotted throughout regular product runs for gathering data.

From data presented by the authors at the SAE annual mee Detroit, Jan. 8-12.

STRAIGHT-FLOW MATERIALS HANDLING

Simplifies Integrated Operation

For the production of lubrication equipment, Stewart-Warner incorporates all forming, finishing, and other necessary operations into one closely-knit continuous operational sequence

By DAN REEBEL
Associate Editor, STEEL

MPLETE control of all stages of fabrication, fin-ng, assembly, packing and shipping of Alemite lu-rating units and accessories is secured with op-ion of its own completely integrated plant by the mite Division of Stewart-Warner Corp., Chicago. any innovations are found in this scientifically out facility capable of producing several carloads inished equipment daily. Some of these include: er conveyor movement of work-in-progress, use entralized lubrication wherever possible, electronic ection procedures, infra-red drying of surface hes and straight-line material flow throughout complete operational sequence. Raw materials r in the same area from which finished products shipped out; either truck or railroad freight cars utilized.

epresenting almost a decade of planning, the t—today it produces Stewart-Warner's Atomic of lubrication equipment—handles the fabrica-and surface finishing of the units' covers and ctural frames and the final assembly. Other ponent parts such as pumps, swivels, valves, etc., produced by their other plants in the area.

ll the necessary power shears, press brakes, ch presses, all types of welders, sanders and pol-ishing lathes are available to handle the complete gamut of fabrication required.

Permits Inventory Reduction — Shearing facilities available enable the company's purchasing department to buy steel in mill sizes, thereby reducing inventory of various sized materials as 5 or 6 different sizes can be made from single sheets. This eliminates possibility of bottlenecks and reliance on outside sources for specific sizes.

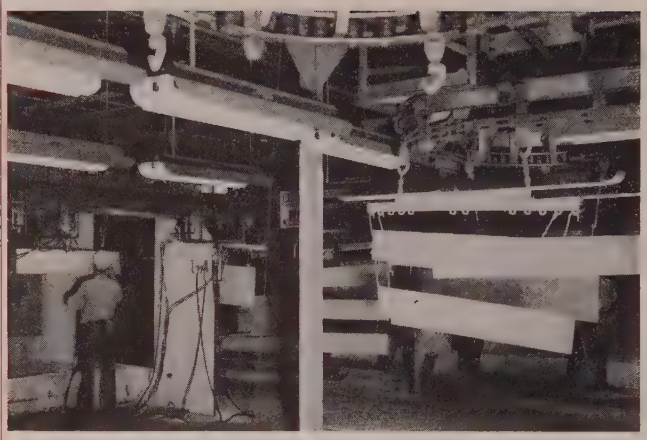
Material movement throughout the plant is established by predetermined schedules and so regulated to affect a continuous flow at all times.

After shearing to size, material goes through the punch press line or the press brake line, whichever sequence of operations is indicated for the part being fabricated. All components to be subsequently used in the subassembly area are produced in this section.

When subassemblies are to be finished, they are removed from a temporary storage area (the removal enables proper flow of work through the surface finishing area and to the assembly area) and loaded on a 1158-foot continuous overhead chain conveyor that travels 8 feet a minute through a three-stage cleaning unit, overhead drying oven, prime spray booth,

Pressures up to 350 tons can be secured from the presses in this battery used to blank, draw, form and trim raw material into covers that are used for Alemite lubricating equipment

Component parts are "jet" propelled through washing, rinsing, and acid etching operations as powerful streams of boiling hot water and cleaning solutions provide clean metal surfaces for painting



Pressurized area shows parts receiving spray coats. Components move by conveyor

prime baking oven, finished spray booth and finished baking oven to the unloading area. Complete circuit of conveyor requires about 2 hours, 25 minutes.

Pressurized Painting Chamber—A totally enclosed, pressurized room contains the actual painting section. Filtered and temperature-controlled air is distributed at the rate of 75,000 cfm into the pressurized spraying chambers, insuring a healthful and dirt-free work area. Overhead baking ovens (infra-red heat) operate at temperatures ranging from 325 to 650° F, and are heated by Burdett gas-fired burners. Facilities for masking and dipping are available if such operations are required. A versatile paint distributing arrangement (located in an adjoining structure) can provide spray booth with eight different paints to as many operators. Paint is circulated continuously through this system by one of the company Alemite Versatal pumping arrangements.

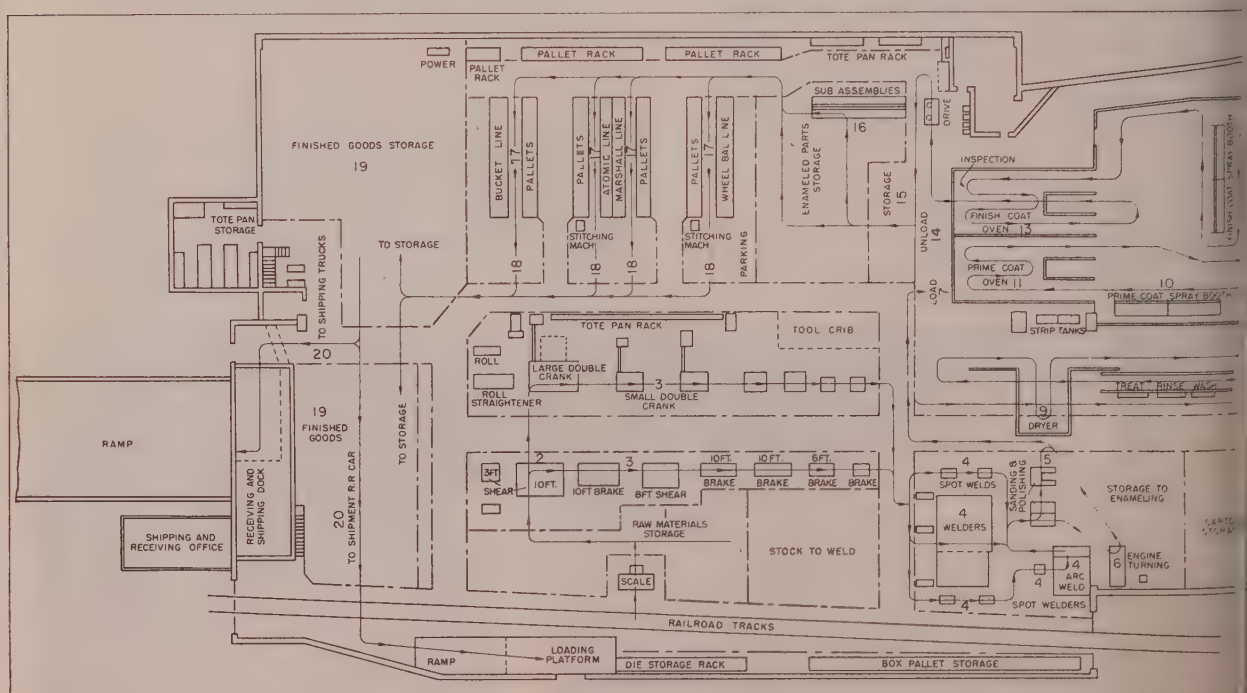
The three-stage cleaning cycle consists of a on minute spray with an acid-phosphate cleaner at 16 180° F; a hot water spray rinse for 45 seconds the same temperature, and a 45-second spray with 140-160° F rinse containing an acid neutralizer impart a rust preventive coating on the materia Next, material is dried in an overhead oven for abou 4 minutes at 340° F. It then enters the pressurize finishing room. If dip-coating is specified, parts a removed from the conveyor, dip-coated and returne to the conveyor just before entering into the finis baking oven. They by-pass primer-spray booth primer baking oven and finished spray booths.

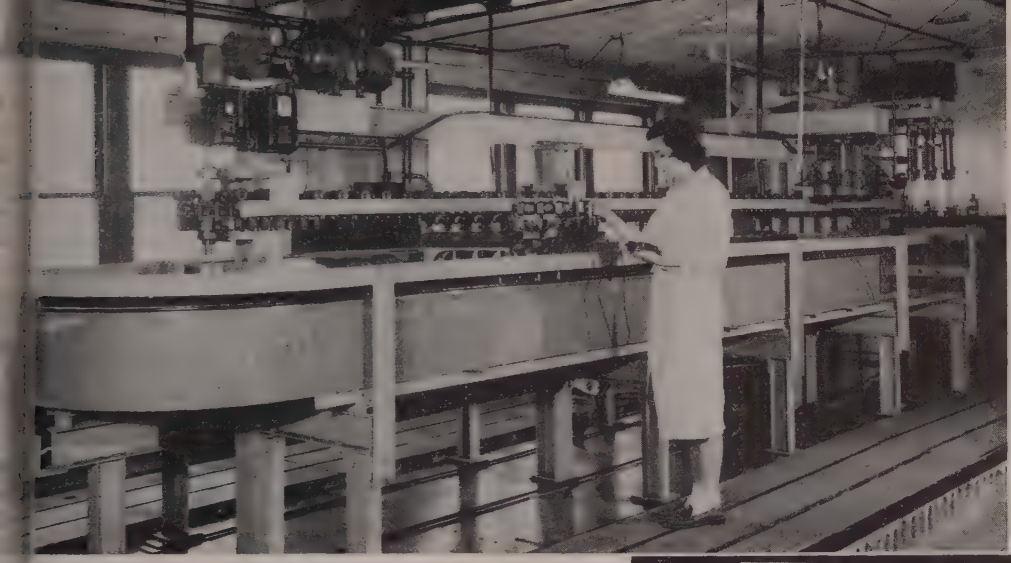
Painting Sequence — Prime coat is manuall sprayed-on in two 15-foot-long water-curtained booth set end-to-end, each equipped with two spray station Next, the primer coat is baked for 10 minutes at 315 F in an overhead oven. It is followed by a finish co of enamel manually applied in two 15-foot long wate curtained booths set end-to-end, each equipped wit two spray stations. Next, the finished coat is bake for 10 minutes at 310° F in an overhead oven. Fro this point material returns to floor level, leaves th pressurized room and moves to the unload area fo inspection and removal from the conveyor.

Parts not requiring any further assembly are packe and loaded on pallets to await shipment. Other m terial is palletized and transported to the assemb area. Here it is inspected, assembled, packed in ca tons, again palletized and moved by fork truck the finished goods area from where it is shipped.

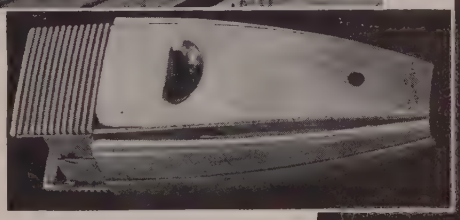
One of the many quality control measures in u at this plant are sensitive GE electronic gages f checking thickness of the paint coat. They can mea ure to within one-quarter of a thousandth (0.0002 of an inch. Full thickness of the finish at all poin —with no weak or thin spots—is thus easily assure

Plant plan shows the flow of materials and subassemblies besides the placement of various pieces of processing and finishing equipment





View of pilot plant for electroforming fountain pen caps at the Battelle Memorial Institute



Above — Razor case made of nickel electroformed over plastic base

Right — Sieve and filter made from copper-nickel electroformed screen. This Lektromesh screen produced by C. O. Jelliff Mfg. Co. is built up as a one-piece solid metal product by electrodeposition

ELECTROFORMING

A Mass-Production Tool

"Cold casting" produces annually $100 million worth of products ranging from fountain pen caps to jet engine motor mounts. Tough design problems on intricately shaped metal parts are being solved successfully by improved electroforming techniques

ELECTROFORMING is being successfully applied to a variety of metal forming jobs. Actual applications have advanced this relatively new method to the point where it should be considered when deciding on the best method or process to manufacture a particular metal product. The process, also known as "cold casting" has simplified many design problems, primarily in small lot precision jobs.

Improved techniques now permit its use on a mass production scale to allow freer design and cheaper production of many articles. Several hundred plants are producing regularly scheduled electroforms, valued at more than $100 million per year.[1] Products made in whole or in part by electroforming are supplied to such industries as automobile, aircraft, radio, radar, glass, printing, rubber tire, and tool.

Metal on Mandrel—Electroforming is a process in which a comparatively thick layer of metal is deposited by electroplating on a mandrel or matrix which can then be removed so that a self-supporting shell or formed article is produced. In this process, electrodeposition goes beyond its common function of merely providing a protective coating and becomes a metal forming or fabricating process applicable to the production of many intricately shaped articles that cannot be formed as efficiently and accurately by other methods.

Some of the articles produced by electroforming cannot be made by other methods. Most electroforms, though, are so produced because they can be made with equivalent or better quality at lower cost. Electrodeposition and stripping procedures are adaptable to continuous and automatic processes involving little, if any, costly hand labor and they may frequently be substituted for a number of tedious manual machining and joining operations. Electroformed shapes of uniform strength eliminate the need for brazed or welded joints in many cases.

For tube-like or cup-like shapes, electroforming methods are particularly valuable since repeated drawing and annealing operations can be avoided. Metallurgical control of properties for electroformed metal is rapidly becoming an exact science, and future developments in electrochemical-metallurgical

know-how are certain to be significant to industry.

Copper, silver, iron and other metals can be and are electroformed. Nickel, because of its hardness, tarnish-resistance and other properties has been widely used in production work. Electroforming with alternate layers of two metals, such as copper and nickel, has been claimed in certain instances to provide advantages over either of the single metals.

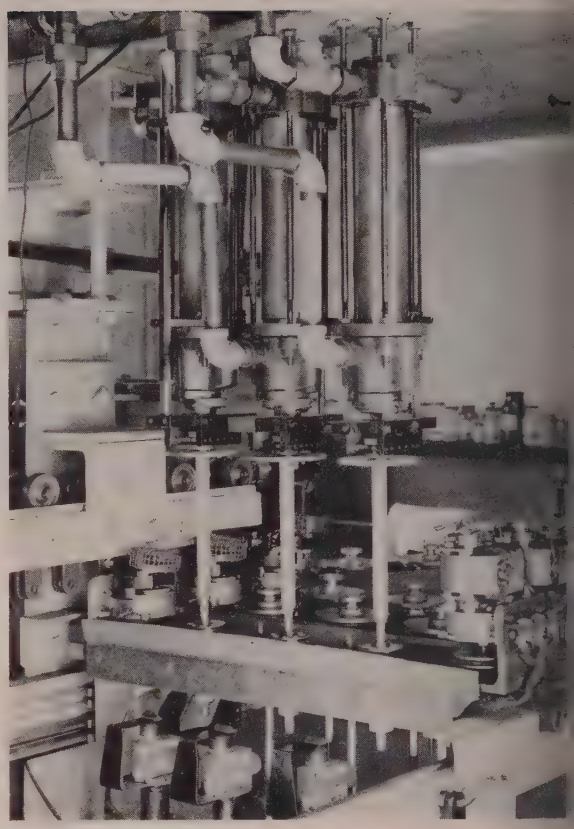
Physical Properties Good—Nickel for electroforming can be deposited with a hardness of 150-425 Brinell with corresponding ductility values of 30-6 per cent, respectively, in 2 inches, and tensile strengths of 51,000 to 152,000 psi. Table I shows physical properties of various electroformed deposits and baths for producing them based on data from International Nickel Co.[2] Some electroformers utilize laminated layers of nickel-iron-nickel. Compared with the other two metals, electroformed copper is relatively stress-free but has lower strength and hardness properties. Table II was prepared by Battelle Memorial Institute to give the physical properties of the metals most widely used in electroforming. These values indicate properties obtainable in the "as plated" state.

Since the thickness of electroforms must usually be several times that of electroplates, baths and operating conditions efficacious for high-speed deposition rates are preferred. Nickel baths, for example, are sometimes operated at current densities around 200 amp per sq ft (0.01-inch per hour), which is seldom reached in decorative plating. Methods and rates of agitation can be chosen so that high current densities can be applied.

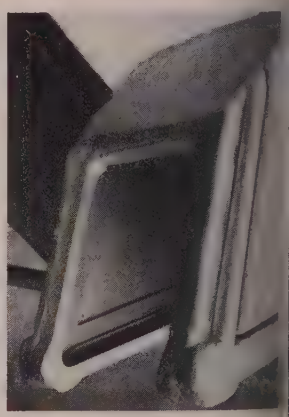
It is understandable that smooth deposits are more difficult to obtain for thick electroforms than for thin decorative plates. Those who have produced electroformed articles have demonstrated repeatedly that acceptable smoothness can be obtained for thicknesses up to ¼-inch. Careful control is, of course, necessary. Filtration methods and rates used may seem fantastic to many job platers, but they have been shown to be both practical and economical.

Minimizes Dirt Infiltration—Designs for tank and agitation equipment to minimize the effect of dirt precipitated from the air should be evaluated for their effects if air filtration is not possible. Fluid flow should be directed so as to minimize dirt contact with the work until the dirt either drops below the work or enters the filter lines. The solution below the work should be uniformly drained from the bottom of the tank or allowed to remain stagnant. Chips from moving machine parts (gears, chains, brushes, commutators, etc.) must not be allowed to enter the electrolyte, or to collect on surfaces adjacent to the bath.

Metal fabricators generally think of electroforming as limited in wall thickness to a fraction of an inch, but electrodeposition can reproduce significant surfaces with only a few thousandths-inch wall, which can be subsequently built up by casting, brazing, welding, metal-spraying or sputtering to the desired thickness of the finished article. Thickness uniformity is very important and is generally controlled more accurately than in commercial decora-



Above—Closeup of the Battelle stripping station for electroformed caps



Right—This 70-pound jet engine motor mount was electroformed of nickel. Courtesy Bone Engineering Co.

tive plating. Special techniques which are frequent employed include the use of (1) conforming anod (2) bipolar electrodes, (3) current-insulating shiel and (4) current robbers. Because conforming anoo from soluble metals are difficult to maintain, th are made almost exclusively from insoluble ma rials. Alloy lead is used in both copper and nic baths.

Two Kinds of Mandrels — Electroforming diff from electroplating chiefly with respect to the ad sion of the deposited metal to its base. With few ceptions, electroforms must be started on a base preformed shape but must be readily separable the from, after deposition is complete, or during an termediate stage. The starting forms are refer

nost frequently as mandrels, molds, patterns, s, impressions, and formers.

vo kinds of mandrels are in use: Temporary, h are destroyed as to form each time, and per- ent, which are removed intact. Shape of the roformed part generally determines which man- to use. Temporary mandrels are made of low- ing metals, waxes, metals like aluminum and die castings which are dissolved out of the elec- rm, synthetic resins, and plastics. Many of e can be melted out and formed repeatedly. Per- ent mandrels are made of chromium-plated hard , stainless steel, aluminum, and nickel.

Inside Machining—The advantages of electro- ing are greatest where external or internal di- sions require a great amount of machining, or e complex shapes require expensive and elab- machining. Electroformed parts are not limited all dimensions as are regular castings which are ult or impossible to cast with very thin walls. n electroforming, the thinner the wall thickness, more economical the operation; yet the strength ne-piece construction is achieved. In addition, roformed parts reproduce in detail the surface of nandrel.

a microfinish surface is desired on a complex ior section it can be obtained by finishing the outside surface of the pattern to the desired degree of smoothness. By electroforming on this surface, the necessity for all complicated inside machining is eliminated.

Metal Screens Electroformed—A unique development made possible by electroforming is the manufacture of metal screens by plating copper or nickel or copper-nickel as a one-piece, solid metal product wholly by electrodeposition.[4] No woven or other foundation structure is included in the process, operated by C. O. Jelliff Mfg. Co. The metal screen made by electroforming is known under the trade name Lektromesh. It presents a smooth surface and is easily fabricated by stamping, forming, soldering, and similar processes.

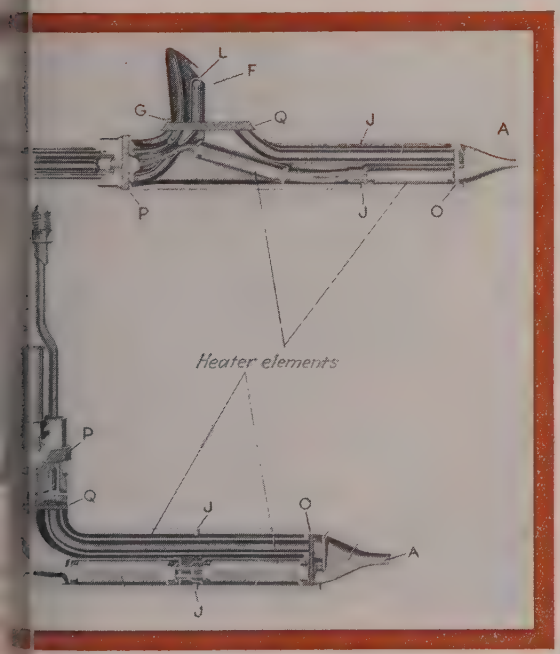
The plane rigidity of the material is most advantageous, particularly in formed cylinders and die cut strainers. In many cases it is possible to eliminate all bindings and supporting materials. Another special feature is the latitude in design. The design need not be held to standard counts, but the openings and locations of the openings can be constructed to suit specific needs. The screen is produced in nickel, copper and copper-nickel; it is reported that the copper-nickel screen offers an exceptionally wide range of possibilities because of its corrosion resistance and its mechanical properties.

This screen consists of a core of plated copper entirely surrounded by plated nickel. The ratio of copper to nickel can be varied. Generally, the electroformed screen is used in the fine meshes beyond the limits of perforated metals.

During World War II, considerable work was carried out in the production of precisely dimensioned radar wave guides. Only through electroforming was it found practical to achieve the close internal dimensions and smooth shapes of the complex shapes involved.[5] It is reported that dimensional tolerances of 0.0001-inch were common and several times a tolerance of 0.00005-inch was met. The finish was required to be less than 4 microinches.

Cold Cast Reflectors—Another electroforming application is the fabrication of searchlight reflectors.[5] In this case nickel and copper are deposited upon a master glass mold made conductive with a film of silver. When the shell is electroformed to the desired thickness, it is separated from the mold, the silver is removed and the nickel surface is plated with a flash of rhodium, 30 millionths of an inch thick, for reflectivity. Reflector signs for road warnings are an applied application.

Assembly of component parts has been accom-



ove—Pitot static tube. The assembly was im- dded in a low melting alloy to form a mandrel ound which the cover was electroformed to join the rriers into air-tight compartments. The alloy is lted out through holes at A, J and G by heating an oil bath at 600°F. Photo courtesy of Kollsman Instrument Co.

ght—Electroformed nickel cavity for casting plastic diamond shapes

TABLE I
PLATING SOLUTIONS FOR ELECTROFORMING AND PHYSICAL PROPERTIES OF DEPOSITS

Nickel	Soft	Medium	Hard
Nickel sulfate	44 oz/gal	.....	24 oz/gal
Nickel chloride	6 oz/gal	40 oz/gal	.....
Ammonium chloride	.....	.....	3.3 oz/gal
Boric acid	5 oz/gal	4 oz/gal	4.0 oz/gal
Temperature	115-140° F	140° F	110-140° F
Current density	25-100 amp/sq ft	25-100 amp/sq ft	25-50 amp/sq ft

Copper	
Copper sulfate (crystals)	27 oz
Sulfuric acid	65 oz
Temperature	75-12
Current density (average)	15-10 a Sq f

Iron	
Ferric chloride	50 oz
Calcium chloride	25 oz
pH	6 to
Temperature	185-19
Current density (average)	50-100 a sq ft

Physical Properties of Deposits

	Hardness (Vickers)	Ductility (Percent elongation in 2 in.)	Tensile psi
Copper	80	22	36,000
Iron	240	15	50,000
Soft nickel	140–160	30	51,000
Medium nickel	230–260	21	98,000
Hard nickel	350–475	6	150,000

Based on data collected by International Nickel Co.

TABLE II
PROPERTIES OF VARIOUS ELECTROFORMED METALS

Metal	Hardness Brinell or Vickers	Tensile Strength psi	Elongation per cent*
Nickel			
Hard, stress-free as-formed	130–500	Up to 132,000	Up to 20
Very hard as-formed	400–575	Up to 160,000	Up to 9
Very hard stress-annealed	300–400	Up to 90,000	Up to 30
Fully annealed, re-crystallized	No data	45,000 to 55,000	Up to 50
Copper			
Stress-free as-formed	30–120	30,000 to 68,000	5 to 20
Cold-worked, ductile	65	Up to 102,300	40
Iron			
Stressed as-formed	225–350	50,000 to 110,000	5 to 20
Annealed	140–165	40,00 to 55,000	27 to 40
Cobalt			
As-formed	150–375	No data	No data
Silver			
As-formed	50–300	No data	No data

* Reported in most cases as elongation in two inches.
Based on Data Reported by Battelle Memorial Institute

plished in the electroforming of pitot static tubes.[6] In this case, it is necessary that the separate air pressure compartments be assembled to contain resistance heaters and tubing. The silver soldered skeleton containing the tubing, heaters and barriers O, P and Q has cast around it a mandrel of low melting alloy of lead-bismuth eutectic. The mandrel with the edge of the barriers exposed is then plated with the copper until the shell is thick enough (0.075-inch) to have the necessary structural strength. The alloy is melted out through holes at A, J and G by heating in an oil bath at 600°F. The outer surface is then ground, polished, and nickel plated. This technique involves a unique method of assembly which would be extremely impractical by other means.

Dies and Cavities — Electroforming is being used for the production of molds for casting plastics. Electroformed nickel injection-molding cavities for plastics offer many advantages over conventional methods, including the following listed by International Nickel Co.[3]:

1. Fine interior finish at no extra cost, as the finish of the male mandrel controls the cavity finish.
2. Very close inside accuracy.
3. Indefinitely high production from one hob or mandrel. In normal hobbing methods, the mandrel is damaged or destroyed by wear.
4. Exact uniformity from one cavity to another.
5. Use of expensive hobs can be avoided by electroforming on wax or plaster models.
6. Nickel cavities are resistant to corrosion during idle periods or to attack by lubricants during molding.
7. Shapes impossible to hob are feasible by electroforming and the parting line can be eliminated in some cases.

Electroforming is also applicable to extrusion c with very small apertures, where fine interior finis are desired. It is reported that hard chromium f ings can be put on where necessary, even in h openings as small as 0.001-inch.

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3. "Nickel Topics". A technical publication of International N Co. (May 1950).
4. Based on information supplied by C. O. Jelliff Mfg. Co., South Conn.
5. Prine, W. H., *Product Engineering* (Dec. 1948).
6. Kasdan, A. S., Proc. Am. Electroplaters' Soc. (1947).

Zinc Coating Benefits Given

Said to be capable of replacing other types plating and having a high corrosion resistance well as being readily available is Zincilate, a one-c anticorrosion coating developed by Industrial M Protectives Inc., Dayton 8, O.

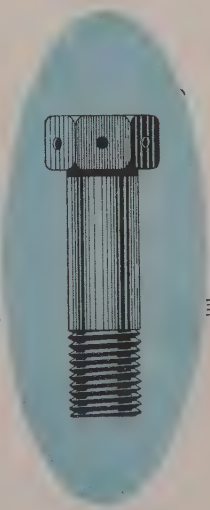
It is the subject of an 8-page illustrated boo which details many of its characteristics, app tions, formulations and methods of application. vantages claimed include ability to withstand se abrasion, application by conventional brush, dip spray methods, self-healing and replacement of n expensive coatings.

Noncontact Gaging Described

Noncontact method of measuring cold rolled s thicknesses from 0.005 to 0.1196-inch as it pa through cold mill operations is provided by an x thickness gage developed by Westinghouse Ele Corp., Pittsburgh. This type of equipment is scribed in an 8-page booklet, DB 404-100, a able from the company, P. O. Box 2099, Pittsb 30. It presents a basic theory of the gage, b diagramming its electrical circuits to explain its eration. Operator's control, gaging unit, and in tor unit are described and electrical and mecha specifications are given.

Chandler

cold wrought engineered products faithfully do the work they are designed to do..... the exacting job of holding manufactured things together.



CHANDLER PRODUCTS CORP.

1491 CHARDON RD. CLEVELAND 17, OHIO

CARBON BLOCK Proposed for OPEN-HEARTH BOTTOMS

Subhearth lining of machined carbon blocks affords extra protection against furnace breakouts. Original installation savings range from $3000 to $5000

Tapping a 150-ton heat of basic steel

FURNACE breakouts, historically a nemesis to open-hearth operators, may become a thing of the past with the development of recent new ideas on the use of carbon in open-hearth furnaces.

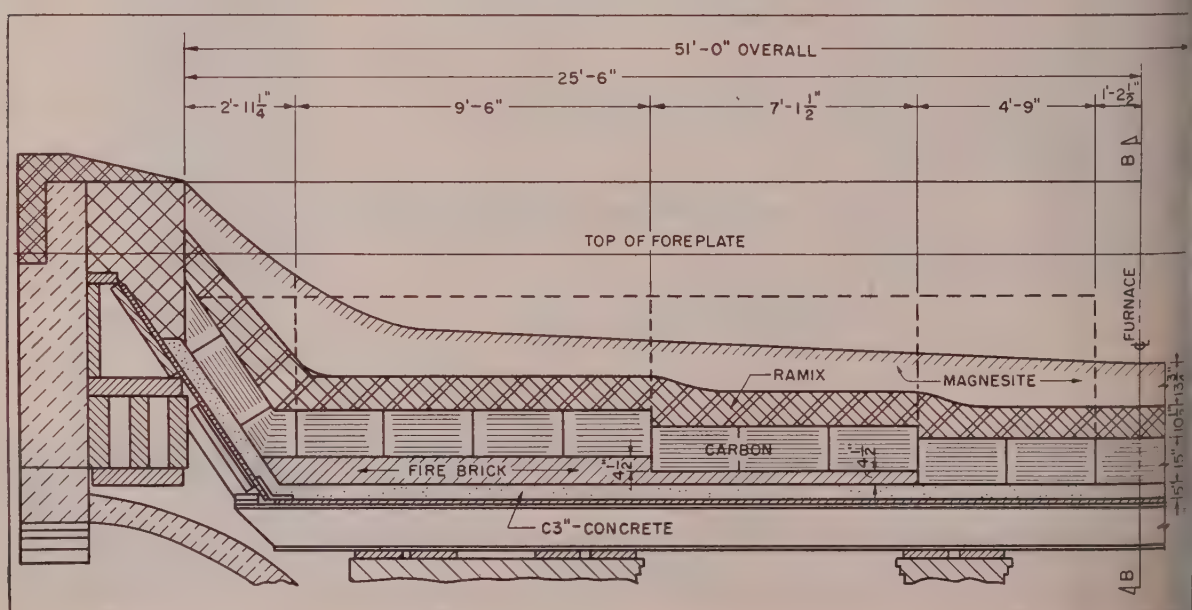
Widely used as a blast furnace refractory in this country and abroad, carbon is now being given favorable consideration by people responsible for our steel-making furnaces. Because of its light weight, about one-half that of chrome-magnesite, or magnesite brick, and its high melting point, around 5000° F, carbon seems to be readily adaptable to the subhearth structure of open-hearth furnaces.

Carbon blocks 15 inches thick and 28 to 31 inches wide, can be furnished in lengths to span furnace hearth dimensions from 12 to 18 feet, and are laid on a 5 to 8-inch insulation layer covering the st pan on the bottom.

The front and back banks as well as the ends the furnace subhearth are made of carbon bloc 11¾ inches thick by width and length measuremer to suit the particular furnace design.

For a Tight Fit—All blocks are machined to give tight fit; a dowel pin running the length of the a jacent blocks gives a staggered joint for extra p tection in case molten metal breaks through the we ing surface of the hearth to the carbon subhear If desired the carbon can be electrically wired to alarm system that will alert personnel if contact made between the molten bath and the carbon su hearth. Because of its high melting point and resistance to load or spalling, the carbon lining w

Elevation of basic open hearth showing location of carbon block

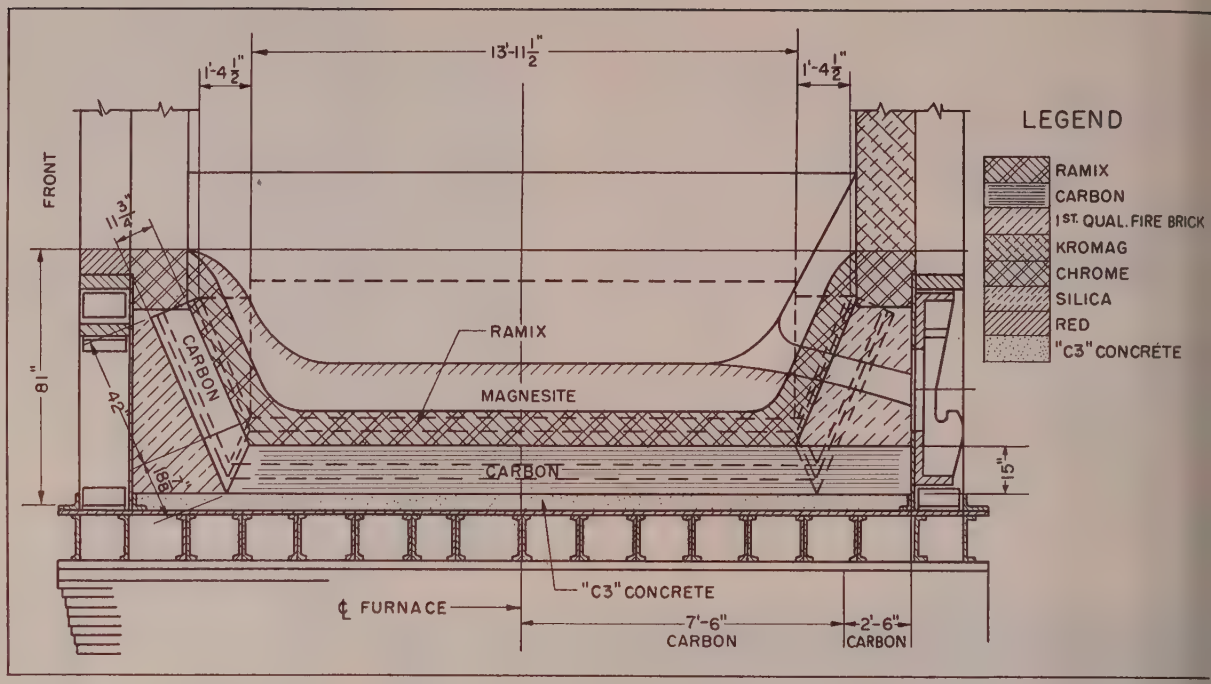


Merged for better service to you

Two substantial leaders in service to the metals industry throughout the free world . . . Edgar E. Brosius Company, Inc. and Salem Engineering Company, have now joined hands in order to be of greater service to their customers. The large and capable consulting and industrial furnace designing staff of Salem is now immeasurably strengthened by the mechanical equipment manufacturing capacity of Brosius, whereas, the blast furnace and steel plant machinery designers at Brosius have many brilliant new partners to assist them. So apropos is this merger of talent that you can now call upon new Salem-Brosius, Inc. with complete confidence whether your needs include the smallest of furnaces or the construction of the largest plant projects.

SALEM-BROSIUS, INC., Pittsburgh 15, Pa.

Affiliates: Brosius Division, Pittsburgh 15, Pa.; Salem Engineering Division, Salem, Ohio; Engineering Co., Ltd., Milford nr. Derby, England; Salem Engineering (Canada) Ltd., Toronto, Canada



Side elevation of hearth showing location of carbon block in front and back banks

contain the molten metal until steps can be taken to tap the heat.

To protect the carbon subhearth from oxidation in the warm-up period of a new furnace, a cold ramming magnesite bottom material is used to form the normal contour of the bottom and banks. The completed furnace hearth can then be brought up to any thickness desired by the use of either the cold-rammed or burnt-in magnesite material.

An average furnace today uses about 20,000 chrom magnesite or magnesite brick for the subhearth whil the carbon replacement is less than 75 pieces. De signed bottoms to date, with the present cost of ma terials and labor show an original installation sav ings of from $3000 to $5000.

Coking Coal Tests Compared

Cokemaking qualities of three high volatile coals and eight blends of different rank coals, using both the standard Bureau of Mines—American Gas Association and the slot oven methods are described in bulletin 480, available from U. S. Government Printing Office, Washington 25, D. C., for 20 cents.

Results obtained at specified temperatures in the standardized sheet steel cylindrical retorts are compared with those obtained in an experimental flat oven designed to stimulate commercial coke oven operation. The bulletin describes the methods and coals used in the experiment and includes photographs of cokes made in each type of apparatus from the various coals and blends. It also contains graphs and tables on the yields of coke, gas, tar light oil and ammonium sulphate.

Tungsten Electrodes Operate Cooler

Use of higher currents on any given size electrodes is permitted through the use of Thor-Tung thoriated tungsten electrodes, said to operate cooler than standard tungsten electrodes. A development of Air Reduction Co., New York, and available as a non-consumable electrode for Heliwelding, the company' inert-gas-shielded arc welding process, the electrod is being widely used in direct current straight pola ity welding.

It is said to have good arc stability, both at th high and low current ranges. Because it runs coole and does not become molten, its consumption is sai to be almost negligible and contamination resultin from accidental or deliberate touching is eliminate Because of its permanency, the new electrode may b pointed to permit continued operation at extremel low current.

Office Doors Shot Together

Spot welding torch of the Heliarc type was use to weld filler strip into the space around the sing window in the doors, flush edges and hinges use in the United Nations skyscraper in New York. A lantic Metals Product Co., Long Island City, N. Y fabricators of the doors, said that this spot weldin method has cut welding time approximately tw thirds.

Process also is stated to have saved time in finish ing as the welds were clean. All welds were mad from one side without backing and took 2½ second each. They were made in thin-gage cold-rolled stee

Movies Record Blast Furnace Combustion Turbulence

Movie technique employed to study movement of solids under action of blast. Model simulates blast furnace action

WHAT takes place in the combustion zone of a blast furnace is now being studied through the medium of high-speed motion pictures. The investigation has not been carried far enough to permit drawing conclusions but the results are encouraging.

The interesting research was described by Dr. J. B. Austen, director of research, United States Steel Corp., Kearny, N. J., before the Blast Furnace and Coke Association of the Chicago District at the Del Prado Hotel, Chicago, Jan. 26. Pointing out that complex things go on in the blast furnace, the speaker said the high-speed movie technique was hit upon as a means of obtaining some knowledge on the subject.

2000 Frames per Second—The movies were taken through the tuyeres of No. 2 Edgar Thomson furnace. Certain modifications of the tuyere peep sight were necessary to permit use of the camera. The pictures are taken at a speed of 2000 frames per second, which is the equivalent of exposing 100 feet of film in 2 seconds. For viewing purposes, the film is projected on the screen at normal speed. The movement of solids, principally coke, in the turbulence of the blast is plainly visible. Through use of an iron rod or probe inserted through the tuyere, the investigators determined that the camera sees into the furnace a distance of about 32 inches.

Based on the findings in the film, United States Steel researchers constructed a model in which furnace action can be simulated. The model consists of a box with 4 foot square plate glass sides placed about 8 inches apart. The box is filled with ¾-inch brick blocks which have a density about the same as coke; 90 per cent of the blocks being cubes and 10 per cent double cubes. When air blast is admitted through a tuyere in the lower left-hand side of the box the blocks assume a counterclockwise circular movement not unlike that depicted in the high-speed movie. In the model, air velocity can be measured precisely and the movement of the blocks correlated with the velocity.

Dr. Austen stated the investigation gives promise of producing valuable information on what takes place inside the blast furnace. He stated that work is continuing but at a slowed-down pace. Today's high demand for blast furnace hot metal does not permit operating the test furnace under varying conditions of blast and burden.

Sintering Machine Described—The world's largest sintering machine was described in a paper authored by W. J. Urban, engineer, American Ore Reclamation Co., Chicago, and presented by A. A. Nelson of the same company. This machine, now being installed in Blackwell, Okla., at the plant of the Blackwell Zinc Co., subsidiary of American Metal Co., is 12 feet wide and 168 feet long over the wind boxes. It has a hearth area of 2016 square feet, which is about 3 1/3 times that of a 6-foot machine.

The machine is designed to produce 2 tons of sinter per square foot of hearth per day. It was stated by the author that the saving in production cost will be $0.18 per ton as compared with three 6-foot machines. Termed a 16 wind box machine, it actually has 32 boxes. Description centered chiefly around type pallets employed and expansion characteristics.

Gas Cleaning a Must—Air pollution abatement at blast furnace and steel plants was discussed interestingly by Dr. C. A. Bishop, research associate, United States Steel Co., Pittsburgh. He pointed out that Allegheny county, Pa., has had an air pollution ordinance for 1½ years, making smoke and fume abatement obligatory. New blast furnaces must have gas cleaning equipment installed. The ordinary dust catcher gets most of the dust, but stacks producing ferromanganese introduce problems which require special treatment.

Dr. Bishop described a sonic method which has been tried to treat ferromanganese dust but it has not proved economical. The method employs sound from a siren concentrated in a pipe to agglomerate dust particles. Difficulty is that the particles agglomerate to such size that they stick and are not easily removed from the pipe. Furthermore, the agglomeration requires that the gas be retained in the pipe at least 3 seconds and a retention of this duration interrupts gas flow unduly.

Best method thus far developed is use of a plate precipitator. Ferromanganese dust particles oxidize; consequently the dust is collected and mulled with water, then briquetted to almond size. These briquets are burned in a steam generating plant.

Slips Studied—Studies are being made of slips in blast furnaces, for it is estimated that 5 per cent of the gas escapes during such period and this gas is laden with dust. In by-product coke plants, good housekeeping is the best means of minimizing dust.

The speaker was asked to comment on dust production in the open-hearth furnace when oxygen is employed to speed the heat. He presented a slide which showed that twice as much dust is generated during the oxygen cycle when oxygen is used as compared with the cycle without oxygen, but the total is not as great as in some early phases of the furnace heat.

In concluding his presentation, Dr. Bishop asserted that the technical aspects of dust removal are less important than the economic aspects.

Officers of the association announced that it will hold its annual meeting and golf tournament for members at Olympia Fields on June 8, and its golf tournament for members and guests there on Aug. 3.

Investment Casting Described

Manner in which the investment casting process is used to make substantial savings in machining, tooling, and elimination of waste metal is covered in a four-page folder published by Investment Casting Co., 319 Chestnut St., Newark 5, N. J. It describes which metals can be cast; a diagram illustrates case history to demonstrate potentialities of the process.

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The 400-ton Danly Straight Side Press shown at right has required an amazingly small amount of maintenance work—an average of less than 2½ hours a week over the last twelve months. And a large portion of this time was consumed by routine press attention such as oiling and adjusting.

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1. QUALITY CONTROL procedures are highly developed in the Harvester production system. Parts from every press are completely checked at least once each shift and with every die change. Charts like the one shown here hang at each machine station and provide a complete running record for statistical analysis purposes.

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STAMPING A VARIETY OF PRODUCTS on a steady production schedule is the job of this 400 ton Danly Straight Side Press. Here, a wagon elevator bottom for corn picker assembly is being formed at a rate of more than 1200 per eight hour shift. Operators like this Danly press because it is smooth and quiet, taking even top capacity jobs easily.

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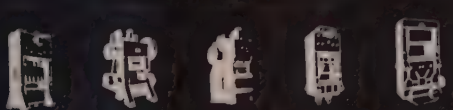

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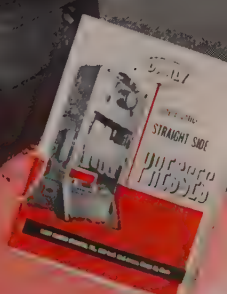

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Send note on Company Letterhead for 488-Page Catalog '41

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVENUE • CLEVELAND 14, OHIO, U. S. A.

White Plans for Emergency

Service and parts operations of White Motor Co., Cleveland, are being mobilized to keep trucks and busses made by the company running during the emergency. White's preventive maintenance-parts conservation program was used as a national pattern by the Office of Defense Transportation in World War I.

Basic idea of the Emergency Service Corps plan started by White is to keep parts on hand in localities where they are needed, and registration of all the company's equipment in service is already underway. New vehicles bear an ESC dogtag listing serial and model numbers of chassis, engine, transmission, axles and other major parts and assemblies. Tags are being assigned to all trucks and busses now in service through the registration plan.

When the parts information plus other salient facts about the operation of each vehicle in service are cataloged, an inventory control system will be established at the Cleveland plant and integrated with all branches, distributors, dealers and service stations. A unit exchange system for complete engines, water pumps, starters and generators, distributors, etc., is an important part of the plan, enabling trucks to be kept on the move with minimum down time. Importance of the drivers is not overlooked and a drivers' manual is provided to make the driver more alert to safety and proper maintenance methods, especially in emergencies. These factors plus expanded and modernized distributor, dealer and truck service station facilities will assure owners of uniform servicing and maximum vehicle life, White officials believe.

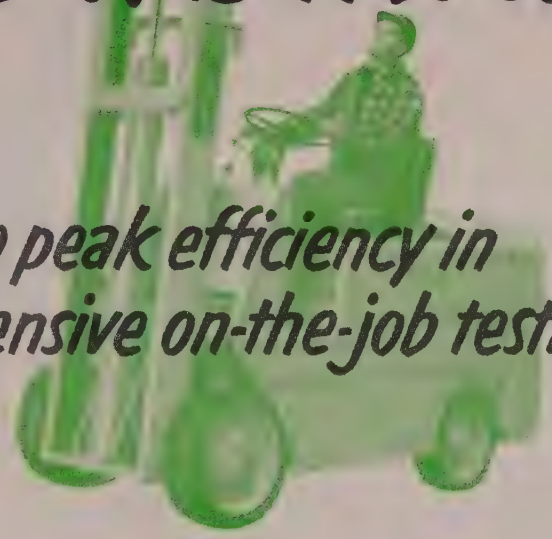
Induction Regulators Added by G

Growing industrial demand for regulated three-phase power at low voltages brought about the introduction of a new line of three-phase dry type, induction voltage regulators by the Transformer & Allied Products Divisions, General Electric Co., Schenectady, N. Y. Included are both self-cooled and forced air-cooled regulators in standard 10 per cent and 20 per cent (raise and lower) ranges of regulation.

They are offered in ratings from 120 to 600 volts and from 12 to 8[illegible] kva. Three-phase, dry-type ratings have been available in these sizes in the Triplex assembly, which consists essentially of three single-phase regulators on a single base. The new arrangement of the three-phase winding on a single core makes possib[illegible]

NOW READY FOR YOU —

New YALE Fluid-Drive GAS TRUCKS



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Here's proof that YALE gives more for your money!

Only YALE gives you fluid-drive for smooth, powerful operation—longer truck life:

Now you can get the same efficient power transmission used in expensive passenger cars. Smooth, *full* power at any speed—even fully loaded on ramps! No jerky stops and starts—you can work in closer quarters, cut down load breakage, reduce driver fatigue, save tires, *lengthen clutch life 3 to 6 times!*

Only YALE gives you this extra-power combination—hypoid gearing—65HP engine:

Here is a newly developed power team that can handle capacity loads, steep grades, heavy road shock day after day in any weather—and still stay on the job with an absolute minimum of "down time" for maintenance!

Only YALE gives you all these exclusive money-saving features:

Sealed automotive type hydraulic brakes give greater safety. Shockless steering provides easy "passenger car" control. Cold drawn, precision aligned uprights assure smooth, even lifting. *Every* vital part, in fact, has been designed and developed to give you *more truck for your money.*

Now, get your own on-the-job proof:

Now, when manpower, time and production are at a premium, is the time to see for yourself how much more this YALE gas fork truck can do for you. Write for all the facts today.

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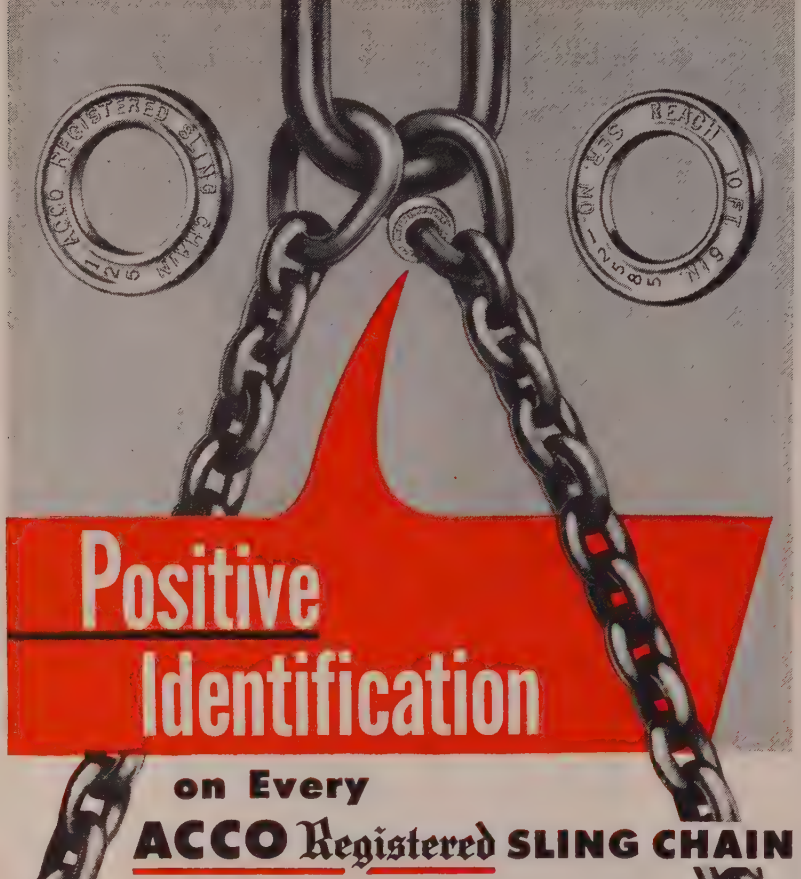

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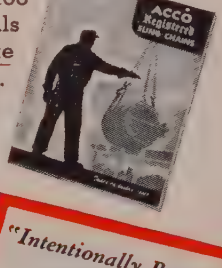
on Every ACCO Registered SLING CHAIN

● This double-faced identification ring is a mark of safety. It stays put. It's always there to give you the necessary information. It enables you to use every ACCO *Registered* SLING CHAIN . . . safely . . . up to its full capacity. It eliminates necessity of stamping such information on the bull ring thereby damaging its metal structure and lowering its lifting capacity.

Don't Gamble . . Don't guess that a certain sling chain will lift an expensive machine. The damage to men and material is far too costly. Select the types, sizes and materials needed for your work from the complete line of ACCO *Registered* SLING CHAINS. The positive identification ring on each one gives you assurance that the unit was rigidly inspected and fully tested. You can't buy better sling chains.



Send for your copy of **Catalog DH-80.** *It shows you how to select, use, and care for sling chains.*

"Intentionally Better" **SLING CHAINS**

ACCO York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

a saving for users in the ratings fered. The new design is not inte ed to entirely replace the Trip assemblies. Some applications ratings (especially the smaller siz lend themselves more readily to Triplex than to the new design.

Lathe Gear Change Made Easy

A simplified quick change g mechanism designed to save time give long, dependable service is be supplied on 16-inch swing and 14 inch swing lathes made by So Bend Lathe Works, South Bend, I A minimum number of parts and b and needle bearings reduce power quirements and increase sturdine A direct reading index chart sho positions in which the two tumb levers are placed for each of 48 scr threads, 48 power longitudinal fe and 48 power crossfeeds. There no sliding clutches or sliding prima end gears to engage.

Standard screw threads from 8 224 per inch are obtained by shi ing the two tumbler levers on gear box. The stud gear is chang for an additional series of coa pitches ranging from four to se threads per inch. Provision is ma for the use of special stud and termediate gearing needed to metric screw threads, diametri pitch worm threads or other spec screw threads. Regular gear gua enclose the metric or other geari without requiring additional guar

Drums Refinished at High Spe

Used steel drums for compan shipping a variety of liquids are conditioned at a rate of 330 to per hour by Acme Steel Drum Newark, N. J., despite many of th being delivered in a battered rusted condition. To maintain t production rate, equipment and m chinery must be tough and troub free.

First step is to wash all drums side and out with a steam and caus soda solution. Before the next s they must be drained and complet dried. Small portions of the cleani solution remaining after the dru are drained are sucked out with hose attached to a vacuum line. S eral vacuum hose stations are se iced by a single Leiman vacuum pu operating at about 8 inches of va um. The excess solution does not p through the pump but is trapped reservoir tanks.

After being well dried the dru are straightened where needed, sa blasted, fitted with new tops

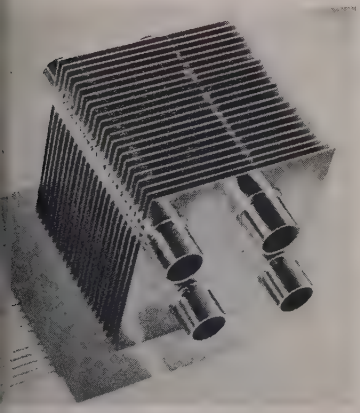
ets and the surfaces are painted. o e drums are given an interior ng for added protection. Con- rs carry the freshly painted s through electric ovens for x drying.

w Catalog Available

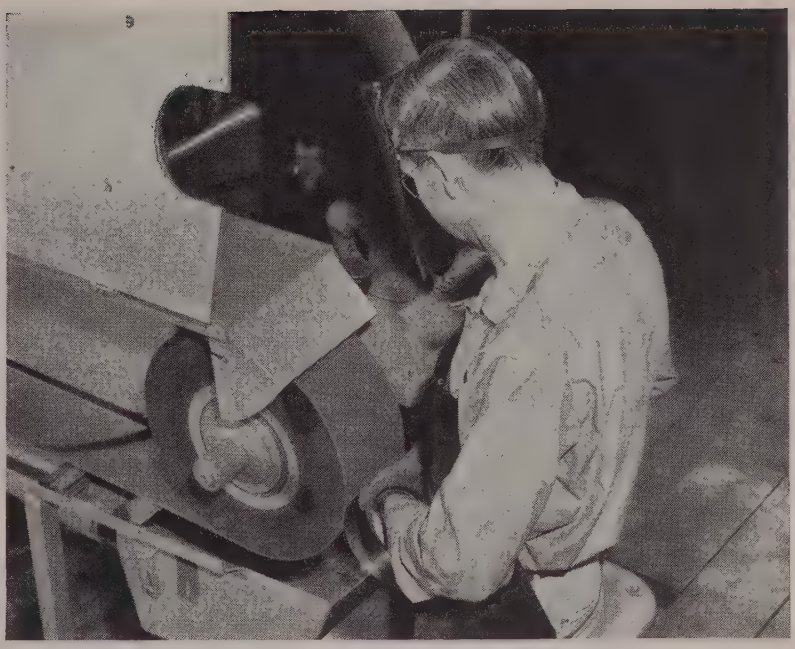
vo features of special importance convenience to users of fasteners ained in the 1951 edition of Con- ntal Screw Co.'s catalog are: 1. y table of head dimensions lists slotted heads and Phillips re- ed heads. 2. The tapping w section includes a tabulation which all information is conven- ly compiled in one place. The r feature eliminates the inconven- e of searching for the informa- in widely separated tables as has the case in many earlier publica- s.

tandard fasteners are treated with plete information in the 100-page trated catalog including head and ad dimensions, recommended uses, hods of applying, general data, shes, packaging, weights, shipping, Specials are thoroughly covered illustrated and include special pose screws made by the company as Sems, Thred-Lock, Spin-Lock, k-Tite and others. Continental's

lets Bond Tubing to Fins

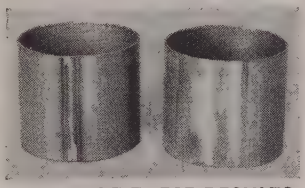


RELY MECHANICAL bond with no ding or soldering is used in bond- these corrosion-proof heat ex- nge units for heating and air con- oning work by Trane Co., LaCrosse, s. Flat plate-type fins of stainless el are stamped and belled, forming onding collar at each opening. A l steel bullet is forced through the e by compressed gas against the ntinuous surface formed by the col- s of fins. To meet requirements in- ved in the process, Carpenter Steel ., Union, N.J., supplied tubes to closer than standard tolerances



SINGLE GRINDING PASS gives smooth finish to shells of vertical electric motors.

800% faster weld removal with 3M Abrasive Belts!



LOOK AT THESE RESULTS

When Century Electric Company, Saint Louis, Missouri, installed the modern 3M Grinding Method, production of stator shells jumped from 15 to 125 pieces per hour. New backstand equipment and fast-cutting 3M Abrasive Belts eliminated one entire operation. Plus value: a smoother, more attractive finish on each seam.

Converting your present grinding and polishing equipment to this new system is easily done—and at a minimum cost. The 3M Representative in your locality will be glad to check your present finishing operations—point out ways to increase your production, cut your unit costs. Use the coupon below for free help on your grinding problems.

Minnesota Mining & Mfg. Co. S 251
Saint Paul 6, Minn.

Please send copy of
"Step Up Production" Booklet.

3M ABRASIVE BELTS

NAME_____

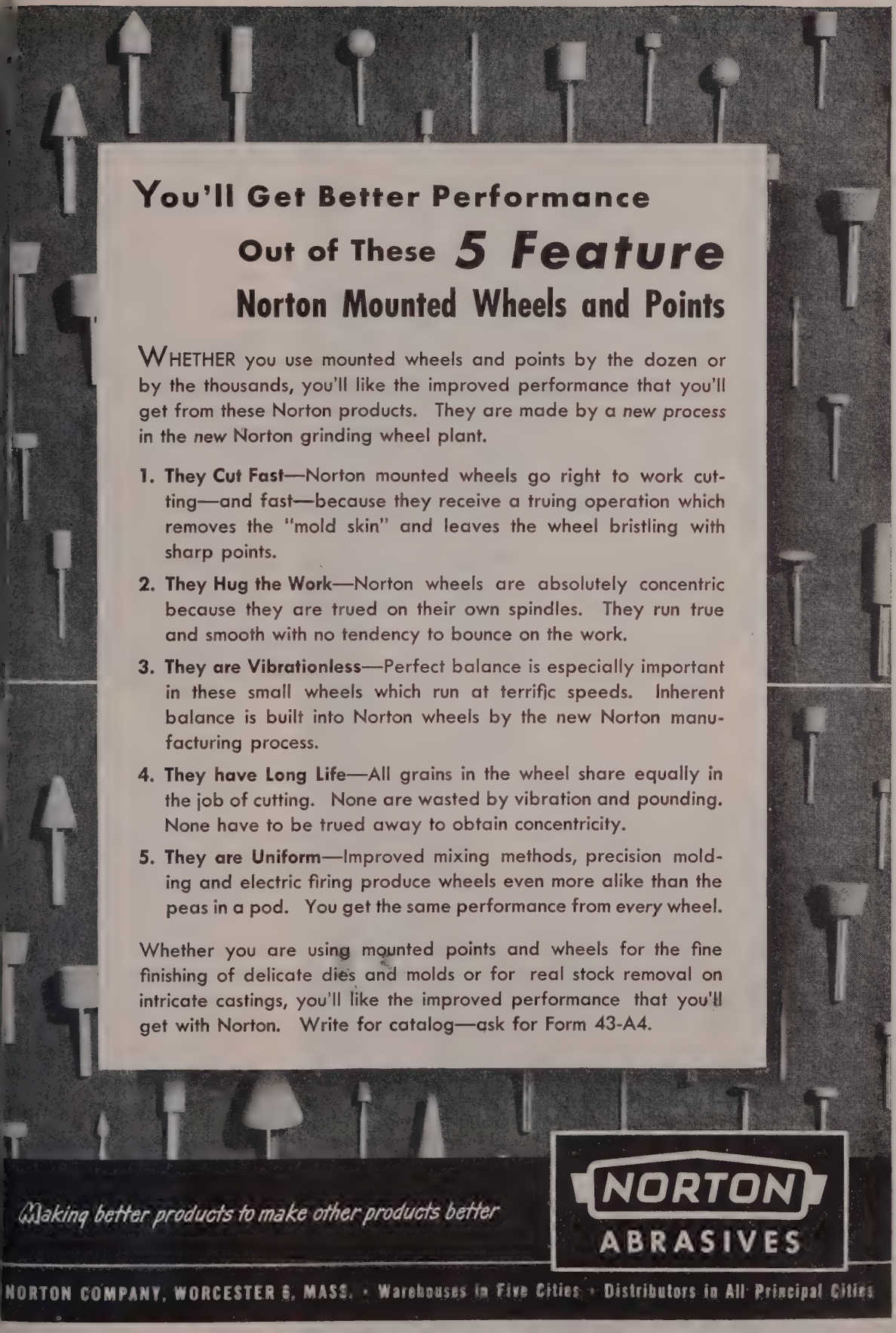
FIRM_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Made in U.S.A. by MINNESOTA MINING & MFG. CO., St. Paul 6, Minn., also makers of "Scotch" Brand Pressure-sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-Slip Surfacing, "3M" Adhesives.
General Export: Durex Abrasives Corp., New Rochelle, N.Y.
In Canada: Canadian Durex Abrasives Ltd., Brantford, Ontario.

NORTON
ABRASIVES
Abrasives - Grinding Wheels - Grinding and Lapping Machines - Refractories - Porous Mediums - Non-slip Floors - Boron Carbide Products - Labeling Machin



You'll Get Better Performance Out of These *5 Feature* Norton Mounted Wheels and Points

WHETHER you use mounted wheels and points by the dozen or by the thousands, you'll like the improved performance that you'll get from these Norton products. They are made by a *new process* in the *new* Norton grinding wheel plant.

1. **They Cut Fast**—Norton mounted wheels go right to work cutting—and fast—because they receive a truing operation which removes the "mold skin" and leaves the wheel bristling with sharp points.
2. **They Hug the Work**—Norton wheels are absolutely concentric because they are trued on their own spindles. They run true and smooth with no tendency to bounce on the work.
3. **They are Vibrationless**—Perfect balance is especially important in these small wheels which run at terrific speeds. Inherent balance is built into Norton wheels by the new Norton manufacturing process.
4. **They have Long Life**—All grains in the wheel share equally in the job of cutting. None are wasted by vibration and pounding. None have to be trued away to obtain concentricity.
5. **They are Uniform**—Improved mixing methods, precision molding and electric firing produce wheels even more alike than the peas in a pod. You get the same performance from *every* wheel.

Whether you are using mounted points and wheels for the fine finishing of delicate dies and molds or for real stock removal on intricate castings, you'll like the improved performance that you'll get with Norton. Write for catalog—ask for Form 43-A4.

Making better products to make other products better

NORTON ABRASIVES

NORTON COMPANY, WORCESTER 6, MASS. • Warehouses in Five Cities • Distributors in All Principal Cities

newest products Hy-Pro insert b holders and hand drivers make th first appearance in the catalog. I gineering executives may secure catalog by writing to: Continen Screw Co., New Bedford, Mass.

Nickel Silver for Rugged Gages

Nickel silver's properties of resi ance to corrosion, fatigue and we relatively good electrical conductivi ease of forming and fabrication a ability to take a high gloss are u ized by Rochester Mfg. Co., Roch ter, N. Y., in a small but vital p to ensure long life and trouble-f operation for heavy duty press and vapor tension temperature gag

Heavy duty pressure gages diesel engines, farm and road m chinery and similar applications m withstand mechanical vibration, ov load and exposure to dust and mo ure. To retain accuracy under t kind of abuse, the company specif wear-resistant nickel silver for in cating pointer assemblies because is simple in design, light weight a can be formed to critical dimensio The 12 per cent nickel silver al (Riverside alloy 402) used in Rochester pointer is specified as a temper, giving not only the desi product properties but also permitt severe bending during fabricat with relatively few rejects and l die life.

Metallic Soaps Cataloged

Applications of Whittaker meta soaps (stearates), aluminum, bari calcium, magnesium, zinc and 2- palminate are described in the bo let being distributed by Whittak Clark & Daniels Inc., New Yo Tables show the analysis, phys properties and solubility of each pr uct. The booklet contains all the formation necessary to select proper metallic soap product.

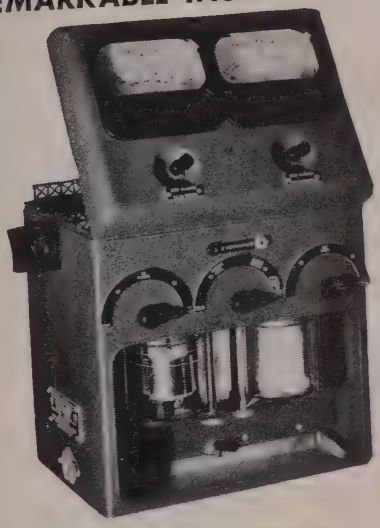
Calculates at a Glance

Weights and lengths of strip me in coils or straight lengths may computed at a glance with a calcu tor available from Precision St Warehouse Inc., Chicago. Althou it is designed so that basic calcu tions are for cold-rolled strip st a factor table is included enabl the user to find an answer for a minum, brass, copper, magnesi Monel and other metals.

It can be used by engineers, e mators, purchasing agents, pr room foremen, etc. Accurate answ are provided but operations are s

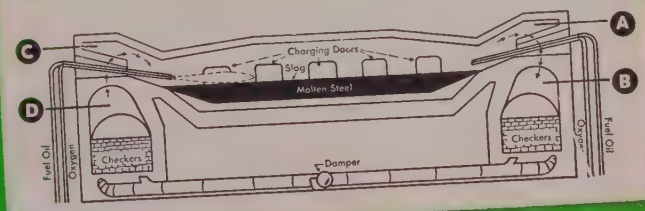
PRODUCTION BOOSTED

BY STRAIGHT ANSWERS FROM THIS REMARKABLE INSTRUMENT



"The way the Cities Service Heat Prover analyzed combustion atmospheres, we knew right off what to correct."
--Open Hearth Operator

Cities Service Heat Prover is applied at A and B—or C and D (on reverse cycle)



This highly developed flue gas analyzer gives correct reports on any type and size of furnace. Quickly, accurately and fully it lets you know how much fuel may be going to waste; whether there are combustibles, or excess oxygen to cause troubles like scaling; what combustion losses are due to useless heating of excess air. Corrections can then be made for added production efficiency. You can profit by this check-up service. Ask about arrangements.

For the Metal Fabricating Industry—
a complete line of petroleum products that includes:

Chillo Cutting Oils	**Pacemaker Hydraulic Oils**
Trojan Greases	**Optimus Cylinder Oils**
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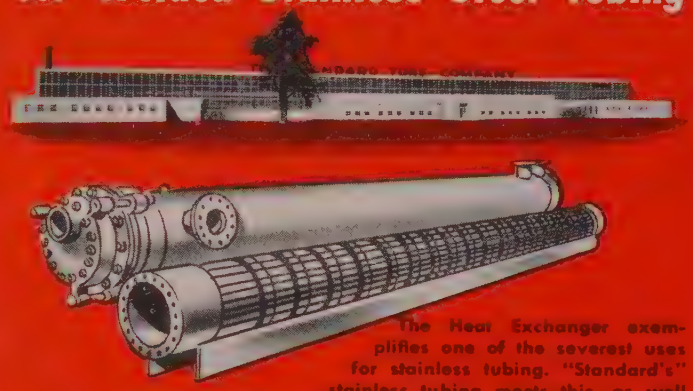
Keep in Step with—

RIGID GOVERNMENT TUBING REQUIREMENTS

SPECIFY "Standard"

for Welded Stainless Steel Tubing



The Heat Exchanger exemplifies one of the severest uses for stainless tubing. "Standard's" stainless tubing meets this, as well as many other different requirements for strength, and heat and corrosion resistance.

Deal with the Specialist among Specialists

A tubing specialist, like other specialists, knows his trade best.

When you deal with "Standard" you deal with a tubing specialist who manufactures millions of feet of tubing every month from stainless and carbon steel—and for 25 years has been serving all types of industry for mechanical and pressure tubing applications.

If you need stainless tubing, be sure you specify "Standard". It pays to deal with the tubing specialist among specialists.

Stainless Tubing Size and Thickness
⅜" O.D. to 3" O.D.
.028 to .095 wall
Carbon Steel Tubing
½" O.D. to 5½" O.D.
.028 to .260 wall

plified so that a knowledge of high mathematics is not required for use. The calculators may be secur without cost by writing to the co pany at 4401-25 W. Kinzie St., C cago 24.

Cobalt-Base Alloys Discussed

Two new cobalt-base alloys a described in a revision of the bookl "Haynes Alloys for High Temper ture Service" published by Hayn Stellite Division, Union Carbide Carbon Corp., Kokomo, Ind. The n alloys are known as Haynes allo Nos. 25 and 36. Alloy No. 25 is wrought material that has exce tional mechanical properties at te peratures up to 1800° F in the ful annealed condition without subs quent aging. This alloy is easy fabricate because it has an avera room temperature ductility of 55 p cent. No. 36 is a comparable ca version of No. 25 but has better cre and stress-rupture properties elevated temperatures than any oth Haynes cobalt-base alloy now co mercially available. It is resista to oxidizing and reducing temper tures up to 2100° F.

Hub Cap Clamps On

Exposed shaft or stud ends f either rotating or stationary asse blies in light applications can use decorative Speed Nut hub cap a wheel retainer introduced by Tinn man Products Inc., Cleveland. It called a Cap Nut and replaces the u ual hub cap, cotter pin and pla washer used on mobile toys and wh goods like coaster wagons, scoote supermarket carts and lawn fur ture.

Since it is a one-piece assemb application is easy and no spec tools are needed. The Cap Nut held firmly in place by six sha points that bind into the axle or sh and eliminates sharp edges found cotter pins or shaft ends. Axle dr ing for cotter pins is eliminated a its decorative value enhances the a pearance of many products. Alu num caps are used making availa a variety of coatings and finish Two styles are produced: De for general use and Top Hat greater shaft protrusions.

Car Shaker Bulletin Released

Description and construction f tures of the car shaker made by Al Chalmers Mfg. Co., Milwaukee, contained in bulletin 07B7221A m available by the company. Specifi tions and a cross-section, through

vibrating mechanism are included. Savings in time and money plus elimination of dangers to operating personnel in steel mills, coke ovens, foundries and similar plants are listed as some of the advantageous features of the shaker.

Air Power Uses Explained

A variety of jobs being performed using air motors made by Bellows Co., Akron, are explained in bulletin CL-30.

The company is using the bulletin to show how many jobs can be and are being done in a way that formerly seemed out of the range of air motors.

Construction features of the Bellows air motor are shown and an insert gives dimensions on various models available. Other features give details of presses and air-powered control devices that are made by the company.

Collets, Pushers and Pads Listed

Benco Collet Mfg. Co., Cleveland, released a catalog featuring collets, pushers and pads plus illustrations of other new machine tool accessories. Lathes and milling machine makes are given together with the collet number which applies. A specification chart is also included.

Stoneproofing a Street Lamp

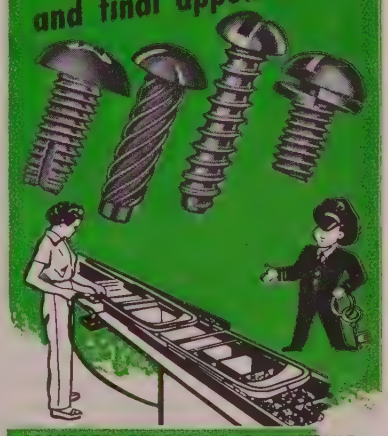
EXPANDED METAL guards are installed by a maintenance electrician to protect street lamps against stone throwing vandals. Guards are made by Wheeling Corrugating Co., Wheeling, W. Va., and are expected to virtually eliminate lamp destruction in New York's Central Park where formerly replacements had to be made as often as ten times a year

TYGON plastic Paint protects metal, concrete and wood from attack by acids, alkalies, oils, fresh or salt water. Tough, flexible film resists impact. Non-contaminating to solutions.

• *Write for Test Samples*

U. S. STONEWARE
Akron 9, Ohio

PRECISION MADE
Pheoll
SCREWS, BOLTS, NUTS and SPECIAL FASTENERS
save assembly time
improve product strength
and final appearance



ACCURATE THREADING SAVES TIME

Pheoll Screws, Bolts, and Nuts are easier to start, easier to drive and easier to tighten—because they're accurately machined and threaded. These features cut your assembly time and cost.

COLD ROLLED THREADING ADDS STRENGTH

The grain structure and flow of metal obtained through cold heading and roll threading increases the structural strength of Pheoll Fasteners. Cold working improves thread bearing surfaces, providing greater area of contact for firmer grip. Greater strength reduces possibility of shearing, and time lost in subsequent removal and retapping.

OUR INSPECTION IMPROVES YOUR PRODUCT APPEARANCE

Step by step Pheoll inspection, through every process of production, assures uniform head size and shape; cleanly milled and recessed heads, neat chamfering and countersinking. All these factors contribute to the quality and finish which add materially to your product's final appearance. *Write* for Pheoll's product literature and price list.

THESE PHEOLL PRODUCTS INCREASE YOUR PRODUCTION RATE. Thumb Screws Machine Screws† • Wood Screws† • Sheet Metal Screws† • Stove Bolts† • Rolled Threaded Wires and Studs • Special Rivets and Pins • Brass Washers

†*Furnished in slotted and Phillips Recessed Head Types*

Pheoll MANUFACTURING COMPANY
5700 ROOSEVELT ROAD
CHICAGO 50, ILLINOIS
SCREWS • BOLTS • NUTS
Industrial Fasteners and Holding Devices

HALLDEN
Automatic Shears

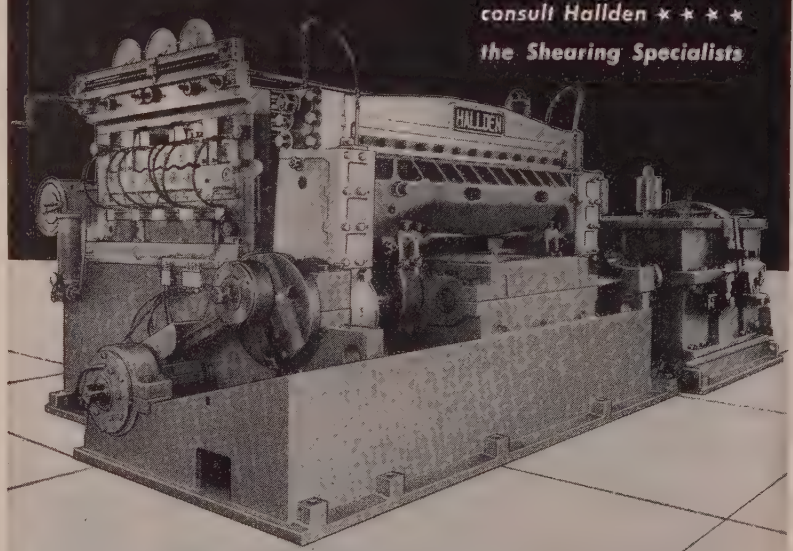
★ FLEXIBLE DESIGN

★ CUTTING ACCURACY

★ CONTINUOUS FEED

★ RUGGED CONSTRUCTION

consult Hallden ★ ★ ★ ★
the Shearing Specialists



THE HALLDEN MACHINE COMPANY

THOMASTON, CONNECTICUT

Sales Representatives

The Wean Engineering Co., Inc., Warren, O. T. E. Dodds, Pittsburgh, Pa.
W. H. A. Robertson & Co., Ltd., Bedford, England

CALENDAR
OF MEETINGS

† *Denotes first listing in this column.*

Feb. 11-15, National Sand and Gravel Association and National Ready Mixed Concrete Association: Annual meeting, Roosevelt Hotel, New Orleans. Association address: National Theatre Bldg., 13th and E Sts., Washington 4.

Feb. 13-15, Radio-Television Manufacturers Association: Mid-winter conference, Stevens Hotel, Chicago. Association address: 1317 F Street, N.W., Washington 4.

Feb. 14, Steel Kitchen Cabinet Institute Annual meeting, Hotel Cleveland, Cleveland Institute address: Engineers Bldg., Cleveland 14.

Feb. 16, Eastern States Blast Furnace Association: Meeting, William Penn Hotel Pittsburgh.

Feb. 16-23, Automotive Electric Association Meeting, Edgewater Beach Hotel, Chicago Association address: 802 Michigan Blvd. Detroit 26.

Feb. 19-22, American Institute of Mining and Metallurgical Engineers: Annual meeting Jefferson Hotel, St. Louis. Institute address 29 W. 39th St., New York.

†**Feb. 26-29, American Medical Association** Congress on industrial health, Biltmore Hotel, Atlanta, Ga. Association address 535 N. Dearborn St., Chicago 10.

Mar. 5-7, Hydraulic Institute: Quarterly meeting, Santa Barbara Biltmore Hotel, Santa Barbara, Calif. Institute address: 122 E 42nd St., New York.

Mar. 5-9, American Society for Testing Materials: Spring meeting, Cincinnati. Society address: 1916 Race St., Philadelphia.

Mar. 6-8, Society of Automotive Engineers Passenger car, body and materials meeting Hotel Book Cadillac, Detroit. Society address: 29 W. 39th St., New York.

Mar. 6-9, American Roadbuilders Association Meeting, Cincinnati. Association address 1319 F St., Washington 4.

Mar. 12-15, National Electrical Manufacturers Association: Meeting, Edgewater Beach Hotel, Chicago. Association address: 155 E 44th St., New York 17.

Mar. 13-16, National Association of Corrosion Engineers: Conference and exhibition Statler Hotel, New York. Conference committee address: P. O. Box 6120, Philadelphia 15.

Mar. 15-17, American Society of Tool Engineers: Annual meeting, Hotel New Yorker, New York. Society address: 10700 Puritan Ave., Detroit 21.

Mar. 18-23, Pressed Metal Institute: Spring meeting and technical session, Hotel Carter, Cleveland. Institute address: 132 Shaker Square, Cleveland 20.

†**Mar. 19-21, National Association of Waste Material Dealers:** Annual meeting, Stevens Hotel, Chicago. Association address: 11 Times Bldg., New York.

†**Mar. 19-21, Steel Founders' Society of America:** Annual meeting, Edgewater Beach Hotel, Chicago, Society address: 920 Midland Bldg., Cleveland 15.

†**Mar. 19-23, American Society for Metals** Seventh western metal exposition and congress, auditorium and exposition hall Oakland, Calif. Exposition address: 2 S. Clark Dr., Beverly Hills, Calif.

†**Mar. 21-22, American Hot Dip Galvanizers Association Inc.:** Annual meeting, Hotel Biltmore, Atlanta, Ga. Association address: 2311 First National Bank Bldg Pittsburgh 22.

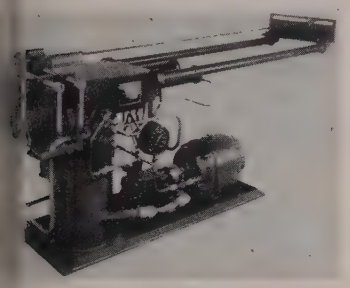
†**Apr. 2-3, Diamond Core Drill Mfrs. Association:** Annual meeting, The Homestead, Hot Springs, Va., Association address: 122 E 42nd St., New York.

†**Apr. 2-4, American Institute of Mining and Metallurgical Engineers:** Open hearth and blast furnace, coke oven and raw materials conference, Statler Hotel, Cleveland. Institute address: 29 W. 39th St., New York

Saving Bender

ompact pipe and tube bending ne is introduced by Wallace es Mfg. Co., 1300 Diversey , Chicago 14, Ill. Model No. 21 inches wide 34 inches high 3 inches long. Unit is powered ? hp 220/440 v, three phase, 60 motor.

s operated by a single lever when pushed down causes the



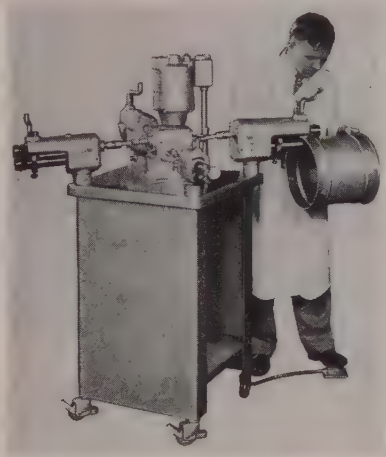
g arm to swing around to the of bend selected and stay until the operator has removed nt part, then the lever is moved d the arm swings back to its al position. Bending die is held four spring clips for easy ing. It can be changed from a hand bender to a left hand r by changing the pressure and ing arms over and inserting olts into holes ready for that se. The 10-inch steel pipe to the top and base are welded o the tank containing the hyc fluid.

No. 1 on Reply Card for more Details

ry Operations Performed

multi-drive power table for g, crimping, burring, turning, ; flanging, elbow edging, etc., roduced by Niagara Machine & Works, Buffalo, N. Y. Two ic footbuttons on the end of e cable and located on opposite of the table provide convenient to control the driving motor, g the operator's cranking or guiding work in rolls. Table ositions for four machines per- g permanent setup and saving spent in hunting tools, chang- lls and setting gages.

lded steel table, mounted on s is sturdy, compact and light. r unit consists of a Niagara reduction unit mounted on an- ion bearings and operating in h of oil. A ¼-hp, 110 v, single ac motor with reversing switch and overload protection is flange mounted as an integral part of the power unit. Table comes complete with eight steel universal joints, four coupling shafts and all electrical



equipment. Existing rotary hand machines can be used or new ones ordered to suit requirements.

Check No. 2 on Reply Card for more Details

Squaring Shears Improved

Expansion and improvement of its new series power squaring shear line is announced by Columbia Machinery & Engineering Corp., Hamilton, O. Shears are available in a complete range of sizes in capacities of 3/16-inch up to 12 feet, ¼-inch up to 14 feet, ⅜-inch up to 20 feet, ½-inch and ¾-inch up to 14 feet, 1 inch up to 12 feet, and 1¼ inches by 6 feet. Smaller units are all welded roll steel construction using the heavy steel

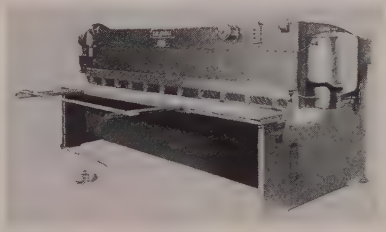


plate work chute as a structural member. Models ¼-inch by 14 feet and larger are of assembled rolled steel construction with structural members dovetailed into each other and bolted.

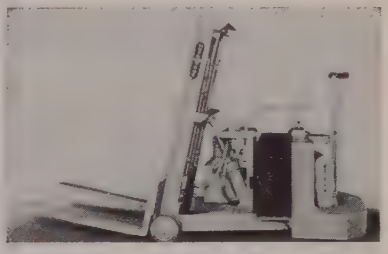
A design feature is the air operated disk clutch installed in the flywheel and controlled by a solenoid through a jog switch or foot switch. Since clutch is placed ahead of gears, there is no motion in the gear train when the shear is not in the cutting cycle. Full cutting capacity is obtained with 80 pounds air pressure, but the operating pressure may be lowered to provide overload protection. A spring operated disk brake, powerful enough to stop and hold the ram in any position for blade adjustment and at top position in regular cutting operation, automatically stops the shear in event of air or power failure. A blade changing jig is furnished with models ¼-inch by 14 feet and larger, and ball transfers are available for tables of models ½-inch by 6 feet and larger.

Check No. 3 on Reply Card for more Details

Ramps No Obstacle

Moto-Truc Co., 1953 E. 59th St., Cleveland 3, O., has developed an 18 v motor drive unit for use on heavy counterbalance trucks for ramp operation. Field tests show the 18 v truck has up to 30 per cent more power than 12 v trucks with similar specifications.

It is available in a 2000 pound capacity with a 24-inch load center and a 2500 pound capacity with an 18-inch or 24-inch load center. Lifting



heights are: 94 and 120 inches with corresponding collapsed mast heights of 72 and 83 inches. Approximate chassis weight is 3000 pounds.

Travel speed is 3 mph with a load, and 3½ mph without a load. Lifting speed is 20 feet per minute with a 2000 pound load.

Check No. 4 on Reply Card for more Details

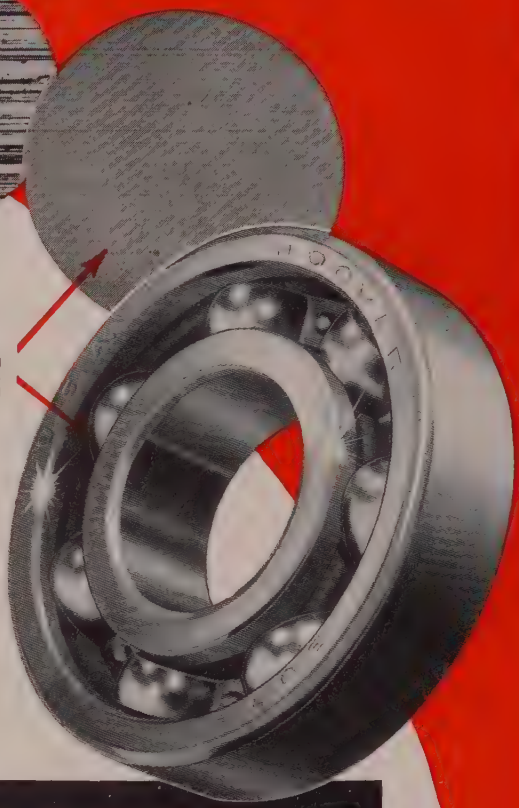
Flexible Oven Size

An industrial oven using high efficiency rod-type heaters mounted on insulated wall sections is announced by advanced heating division, Jensen Specialties Inc., 9331 Freeland, Detroit 28, Mich. It combines high speed radiant heating with temperature controlled convection for industrial heating and drying operations up to 700° F. No welding is required for assembly and the ovens can be enlarged,

Nothing is as smooth as a
HOOVER HONED RACEWAY*

POLISHED
Polished Raceway surface magnified 100 times as used in other ball bearings

*HOOVER HONED
Raceway surface magnified 100 times, as used exclusively in Hoover Ball Bearings.



It's the raceway that makes the difference

HOOVER
America's only
BALL BEARING
with Honed Raceways

90% longer life
30% greater load
Amazing Quietness

The Aristocrat of Bearings

HOOVER BALL AND BEARING CO.
ANN ARBOR, MICHIGAN

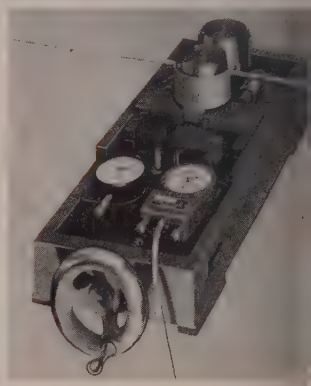
extended or dismantled with cha
made in the heating transfer
by the addition or removal of st
ard catalog parts. All vital parts
maintained from outside the
assembly.

From 4 to 40 kw of heat ma
installed in each 26 x 84-inch p
Rod heaters of any standard b
name may be specified. W
equipped with approved controls
ventilation these ovens comply
latest industrial oven standards.

Check No. 5 on Reply Card for more D

Continuous Wire Gaging

Amount of material the extr
places on wires is automatically
trolled with a continuous wire m
uring gage, model 493 B-80, mad
Federal Products Corp., 1144 E
St., Providence, R. I. It is desi
to handle wire of any size up
inch in diameter. Gage automati



speeds up or slows down the s
of the wire as it passes throug
extruder.

Federal's Electricator is use
transferring the measurements t
speed control. Intermittent irreg
ties which would cause erratic a
in the control are dampened o
the final result is a smooth contin
control of the nominal size o
coated wire. The second indicat
used in setting the gage. Actu
ameter of the wire can be seen
times.

Check No. 6 on Reply Card for more

Large Grinding Capacity

A surface grinder with a 6
inch table and fitted with the
type of Boneham & Turner rem
spindle is available through I
Sales Corp., 164 Duane St., New
13, N. Y., division of British
tries Corp. It allows large pa
be ground when using a ma
chuck without reducing diame
the grinding wheel. Automatic
feed of the table can be made

NEW! a comprehensive discussion of the corrosion resistance of copper and copper alloys

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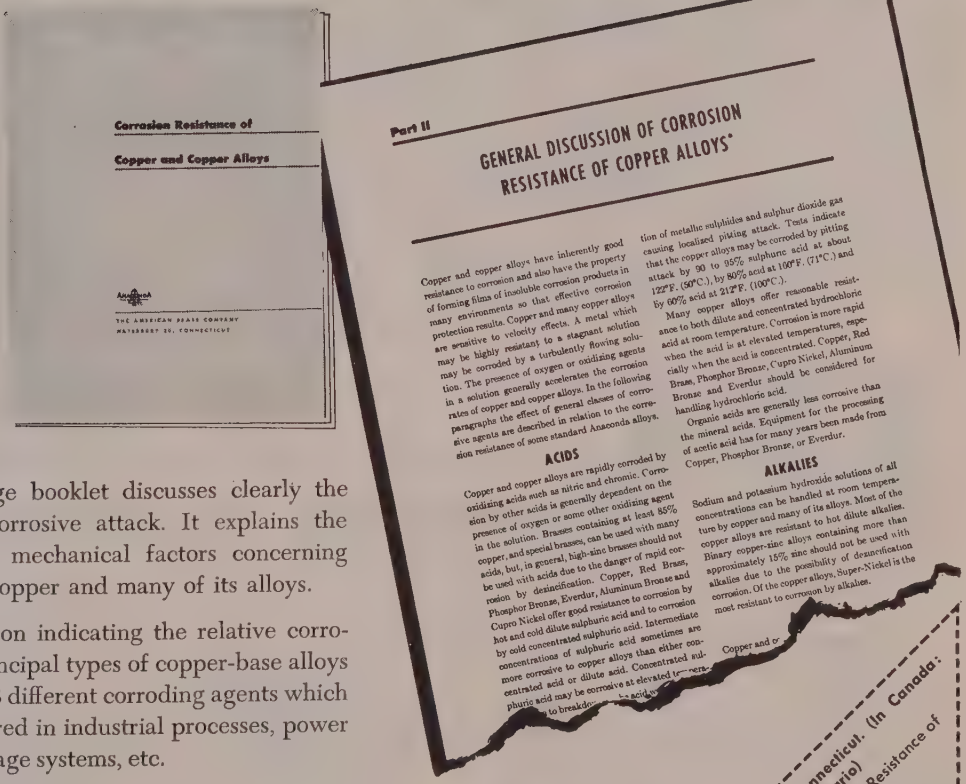

brand-new, 24-page booklet discusses clearly the ...e and forms of corrosive attack. It explains the ...ical, physical and mechanical factors concerning ...sion resistance of copper and many of its alloys.

...luded is a tabulation indicating the relative corro... resistance of the principal types of copper-base alloys ... in contact with 183 different corroding agents which ... requently encountered in industrial processes, power ...s, water works, sewage systems, etc.

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Please send me a copy of Bulletin B-36, "Corrosion Resistance of Copper and Copper Alloys."

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Company_____
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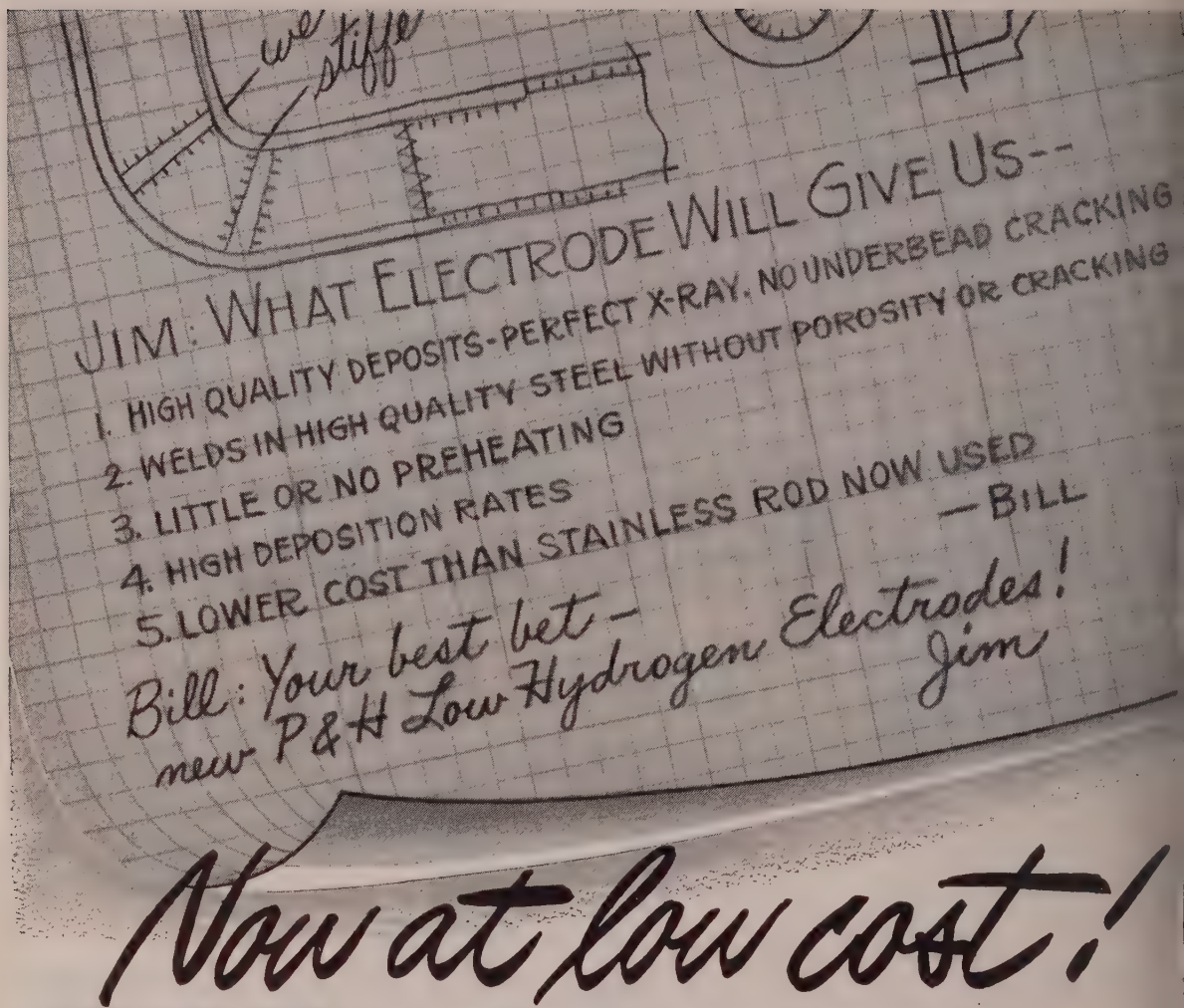
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4. HIGH DEPOSITION RATES
5. LOWER COST THAN STAINLESS ROD NOW USED
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Bill: Your best bet—
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P&H LOW HYDROGEN ELECTRODES

For welds with superior physicals that match special steels, simplify production — —

Here's the world's most complete line of low hydrogen electrodes — 14 types to choose from.

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Simplify your welding procedures. Standardize on P&H Low Hydrogen Electrodes. Your costs are lower, your welds better and stronger.

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HARNISCHFEGER CORPORATION

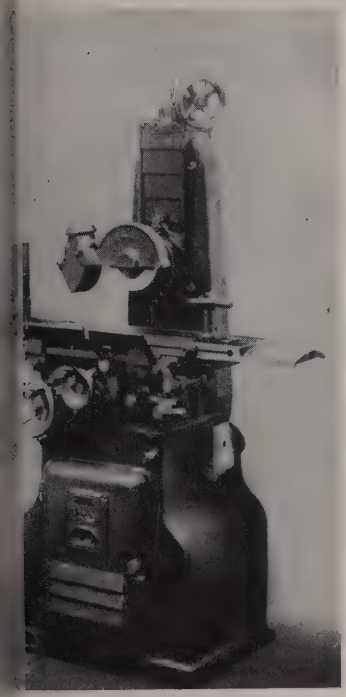
Here are a few of the money-saving P&H Low Hydrogen Electrodes

- *For problem steels:* High carbon, high sulphur, cold-rolled alloy . . . 70LA and 70LA-2.
- *For steel castings repair;* matches analysis and heat-treating properties of Grade B castings . . . P&H .25C.
- *For steel castings repair;* matches heat treating properties of Grade B castings . . . 70LB.
- *For welding nickel-alloy steels;* gives high impact resistance at low temperatures . . . 75LP.
- *For Chrome-moly steels* (1% Cr., ½% Mo.) used in power piping . . . 80LE.
- *For Chrome-moly steels* (2% Cr., 1% Mo.) used in power piping . . . 90LE.
- *To match heat-treating properties of SAE 1040* and like steels. Also for steel-castings repair . . . P&H .40C.
- *For welding high hardenable steels.* Also steel castings repair . . . AW2B.
- *For repair welding Grade C castings* and steels of similar composition . . . P&H-7.
- *Comparable to SAE 8630 steel* . . . excellent heat-treating and flame-hardening characteristics . . . 90LH-2.
- *For welding high hardenable steels* without pre-heat such as re-rolled rail stock . . . P&H-12 and P&H-17.
- *For aircraft and similar steels* . . . has wide range of properties under heat treatment . . . P&H-21.

Excavators • Overhead Cranes • Hoists • Arc Welders and Electrodes • Soil Stabilizers • Crawler and Truck Cranes • Diesel Engines • Cane Loaders • Pre-assembled Homes

at each end of the table tra- and the feed can be adjusted vance the table from 0.01-inch 09-inch at each reverse of the movement.

ssfeed mechanism can be en- or released by adjusting the ed knob which is situated in the of the graduated dial. The ma-



has an oil tight compartment in ase for the motor which is pro- from abrasive dust. It is fitted an automatic belt tightener operates when the grinding is raised or lowered.

No. 7 on Reply Card for more Details

Handling Clamp

ter Industrial Truck Division, -Raulang Co., 1250 W. 80th St., and 2, O., has a new drum for handling cylindrical objects individually or as unit loads on s. It picks up individual steel , steel or wooden barrels, card- drums or any other cylindrical ial and loads the pallet which handled after two rubber-faced plates are removed from the

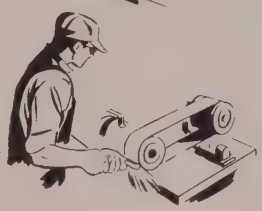
two forks move simultaneously. eans of separate hydraulic cyl- they are adjustable from 32 inside spacing to 19 inches. shoes which slip over and are to standard pallet forks hold rubber grab plates. Pressure r valve positively controls grip- ressure and can be adjusted so ardboard drums can be handled

MICHIGAN RED COAT BRAND ABRASIVES

cutting power and long mileage

are features of

RED COAT BRAND ABRASIVE BELTS



Your money's worth in outstanding service . . . rough and rugged are these fast-cutting abrasive belts that can be depended upon to turn out the work with speed and efficiency. Long-lived action assures abrading mileage that gives you the most for your dollar investment.

Every day RED COAT BRAND ABRASIVES are becoming better known to more and more manufacturers who are highly selective in the materials they use.

RED COAT BRAND ABRASIVES are sold by industrial distributors in many principal cities. They are in position to give you prompt service. If your local distributor doesn't handle the RED COAT BRAND line, write direct for a sample test belt and at the same time give us your distributor's name.

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Michigan RED COAT BRAND ABRASIVES

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Low Cost—Johnson General Purpose Bearings are produced in long runs of each size, at very low unit costs. No charge is made for patterns or tools.

Immediate Delivery—Complete stocks of all sizes are always maintained by Johnson distributors, and by the Johnson Bronze plant and twenty-two warehouses.

Over 850 Sizes—Johnson GP Bearings are made in a wide range of sizes, 55 inside diameters, 55 outside diameters, and 46 lengths from ¾" to 9¾". It is possible to obtain virtually any size combination desired.

Ready to Install—They are completely machined to standard tolerances, ready for immediate installation. Any type of oil groove, slot or hole can be added easily and economically.

Guaranteed Quality—Johnson GP Bearings are cast in a general purpose alloy, providing better than average physical properties and assuring long life and excellent performance. Each individual bearing carries a guarantee to be consistent in alloy, correct in tolerance and of the finest workmanship possible.

If you do not have a Johnson Bronze Catalog of standard size sleeve bearings on your desk, we will be glad to send you one at once. Write today!

Johnson Bronze
SLEEVE BEARING HEADQUARTERS
550 SOUTH MILL STREET • NEW CASTLE, PA.

without crushing. An accumul keeps hydraulic pressure cons for safe removal of the drums.

Check No. 8 on Reply Card for more D

Easier Scale Reading

Dial faces may be tilted downv 25 degrees on a scale made by Hy way Scales Inc., 20624 W. 8 Mile Detroit 19, Mich. This modificatio the company's Hydroscale line of draulic crane scales is made pos by insertion of a V section betw

the dial and hydraulic chamber ho ings.

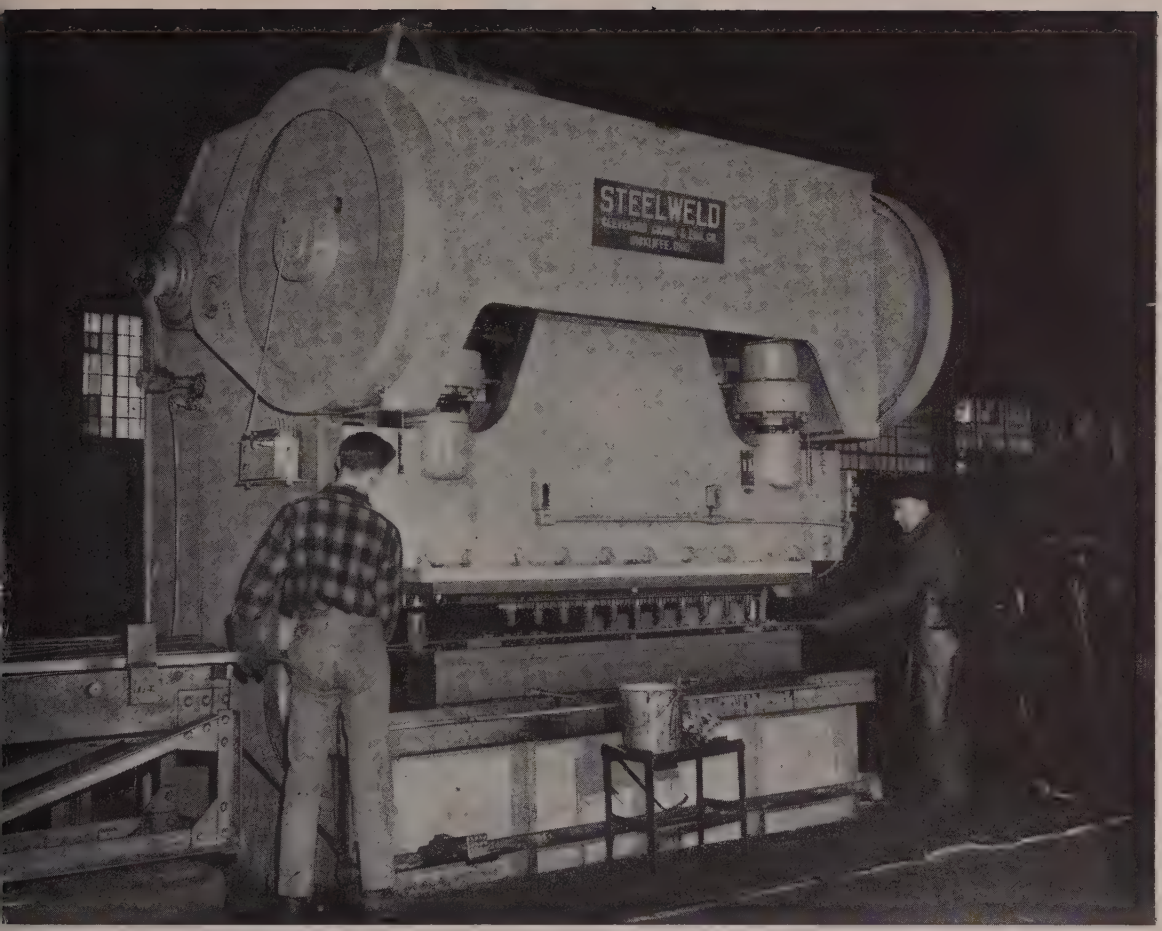
Tilting the dial allows for grea legibilitiy in reading the scale ab eye level and is particularly help when readings must be made at s stantial heights. It does not consu headroom or interfere with the sw el of either eye or hook. This feat is available for all models up to 1 000 pounds capacity.

Check No. 9 on Reply Card for more De

Portable Tool Filer

A tool and die filing machine m in Sweden is available from Nord ternational Corp., 50 Church St., N York 7, N. Y. Carbide and hard m tools can be sharpened without moval from their work place by Diprofile.

It can be used for filing, hon polishing and lapping on inner



Model K5-8 Press, one of two Steelwelds in continuous 24-hour service since 1945, punching a series of holes in bridge floor bars.

2,000 Bars slotted every 8-Hour shift

Although originally conceived as machines for bending metal, Steelweld Presses are now serving a wide variety of uses. Two large Steelwelds at the MacDonald, Ohio Plant of the Carnegie-Illinois Steel Corporation are used solely for punching slots in steel bars, beams and T-sections for bridge flooring.

The time of one press is devoted largely to punching slots in bars 1⅝" and 1-7/16" wide by ¼" thick by 6'-2" long. Each bar contains 13 slots ½" wide by ⅝" to ⅞" long, and 24 slots ¼" wide by ⅝" to ⅞" long, a total of 37 slots all punched at one time. Two thousand bars are slotted in an eight hour shift.

Another standard job is that of punching 2-inch long slots on 4-inch centers in I-beams for bridge sections. These are punched 24 at a time. The beams vary in length from 24'-0" to 45'-0". Two hundred 40'-0" beams are punched in an 8-hour period.

Both Steelweld Presses have been in this service 24 hours a day since 1945.

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CATALOG No. 2010 gives construction and engineering details. Profusely illustrated.

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STEELWELD

BENDING PRESSES

BRAKING • FORMING • BLANKING • DRAWING • CORRUGATING • PUNCHING

outer surfaces, as well as for chafing and sawing. Work can be done on materials ranging from hardest carbide bits to glass, plastics and fibrous materials. An adjustable stroke gives high efficiency and also makes it possible to work in shallow holes. It can be mounted in a lathe that can be used for work on rotating surfaces.

Machine is driven from a controllable 10,000 rpm electric motor rated 1/10 to ⅛ hp. It can be rapidly attached to a flexible shaft that also takes other handpieces.

Check No. 10 on Reply Card for more Details

Synchronous Line Broadened

High speed synchronous generators in four basic designs which have ratings from 1.875 to 50 kva are available from General Electric Co., Schenectady 5, N. Y., and extend the company's line to cover from 1.875 to 1250 kva. Designated as types ATI, ASI and ATB, the generators have frequency ratings of 60 and 400 cycles.

Basic 60 cycle design is an externally regulated generator designed to operate with standard voltage regulator in the exciter field circuit. Standard excitation voltage is 64 volts but equipment for 125 v excitation voltage is available. Ratings at 60 cycles vary from 2 kw, single phase, to 15 kw, 3 phase.

Check No. 11 on Reply Card for more Details

• • •

BUBBLER AND TRAP: King Engineering Corp., Ann Arbor, Mich., introduces two new units for use in gas and air lines: Sight feed bubbler to control and visually indicate relatively small rates of flow and the sediment trap for removing dirt and moisture from the line. Both units may be mounted on front of panel or supported in the line by inlet and outlet pipes.

Check No. 12 on Reply Card for more Details

FOR LIGHT DUTY: Curtis Universal Joint Co. Inc., Springfield, Mass., offers a new ball type universal joint. It is designed for light duty applications and is available in four sizes: ½, ¾, 1 and 1¼ inches, single or double, solid or bored hubs.

Check No. 13 on Reply Card for more Details

FAST DRYING PRIMER: Totrust instant dry rust inhibitor primer, introduced by Wilbur & Williams Co., Boston 35, Mass., is a fast drying, penetrating metal primer. It is protection against peeling, chipping, rusting and enables recoating ordinarily from 10 to 30 minutes with all standard types of paint as well as rubber base paints, vinyl coatings and spraying lacquers.

Check No. 14 on Reply Card for more Details

MILLING CUTTERS: A truncated triangular blade is featured in the new line of heavy duty milling cutters, introduced by Weddell Tools Inc., Rochester 11, N. Y. A wedge type lock permits locking and unlocking the blade within a quarter to a half turn of an Allen wrench. Locking unit is self-contained and wedge is actuated to and fro without use of hammers or drifts.

Check No. 15 on Reply Card for more Details

RECTIFIER CARTRIDGES: High voltage selenium rectifier cartridges with voltage ratings up to 25,000 v per cartridge and current ratings up to 75 ma, have been developed by International Rectifier Corp., Los Angeles 43, Calif. They utilize five different selenium cell sizes varying from ⅛-inch in diameter up to 1-inch in diameter with corresponding current ratings varying from 1.5 up to 75 ma.

Check No. 16 on Reply Card for more Details

CLEANS SMALL PARTS: For cleaning small metal parts by use of soft abrasives, a sandblast cabinet is offered by W. W. Sly Mfg. Co., Cleveland 2, O. It can also be used with sand or metal abrasives. Cabinet is complete with two light fixtures for illuminating the interior, an exhaust fan and a dust bag for making operation dustless.

Check No. 17 on Reply Card for more Details

NO ACID CLEANING: Magicoat, announced by Magnus Chemical Co., Garwood, N. J., is a coating designed for drawing wire without any acid cleaning. It forms a dark, glossy oxide with excellent lubricity. It also makes rod and wire impervious to rust.

Check No. 18 on Reply Card for more Details

SMALL PUMP: A small pump available from Taco Heaters Inc., Providence 3, R. I., may be used as a refrigerator pump, coolant pump, water circulator and other applications where it is desired to move water or soluble oils not under pressure. It will pump 10 gallons per minute against a 3-foot head.

Check No. 19 on Reply Card for more Details

FOR SAFE HANDLING: Jumbo crucible tongs, made by Fisher Scientific Co., Pittsburgh 19, Pa., nearly 21 inches long and are m of 18/8 stainless steel. Handle vides separate grips for thumb one finger. The hand firmly supp the entire weight of the crucible tongs because handle extends bey the finger grips. To prevent han from slipping out of alignm joints of the tongs are flattened.

Check No. 20 on Reply Card for more D

HOLDS WORK FIRMLY: Kn as De-Sta Co No. 650, a new h duty plunger type toggle clamp i troduced by Detroit Stamping Detroit 3, Mich. It positions holds work firmly in place toggle locking action that is sai deliver holding pressures up to pounds.

Check No. 21 on Reply Card for more I

NO SPILLING: No. 11 carboy with pouring spout, made by Ge Scientific Equipment Co., Phil phia, Pa., assures safe, fast and method of pouring acids and liquids from carboys. The air pouring spout, made of acid r ant rubber and plastic tubing, mits a smooth flow of acid wi spurts or splashes.

Check No. 22 on Reply Card for more I

SAFETY SOLVENT: FO 128 veloped by Fine Organics Inc., York 3, N. Y., may be used as a alternative for carbon tetrachl in applications where toxicity solvent residues are factors. It be used for cleaning of both me ical and electrical equipment with complete safety to material men.

Check No. 23 on Reply Card for more

REDUCES NOISE: Designed fo on bins, hoppers, chutes, shak etc., style EM "quiet type" vibr are offered by Cannon Vibrato Cleveland 14, O. There is no i of the piston on either end. are available in 1⅝-inch to sizes.

Check No. 24 on Reply Card for more

FOR MORE INFORMAT
on the new products and equip in this section, fill in a It will receive prompt atte

The Market Outlook

"SICK" switchmen and old man winter ganged up last week to cause the nation estimated loss of at least 100,000 net tons of critically needed steel ingots, as well as large tonnages of pig iron, finished steel products and coke. In addition, metalworking operations over a wide area were adversely affected with accompanying labor layoffs, all because of curtailments due to transportation difficulties arising from the switchmen's wildcat strike, and the cutting off of industrial gas supplies because of severe winter weather. Car shortages and generally delayed transport had forced sharp cutbacks in steelmaking activities at several points late in the week. It will take industry some time to recover fully from the predicament.

PRODUCTION—Curtailment in steelmaking operations dropped the national ingot rate 4.5 points to 97 per cent of capacity. Cutback was severest in the Cleveland district where the rate fell 55 points to 21.5 per cent of capacity.

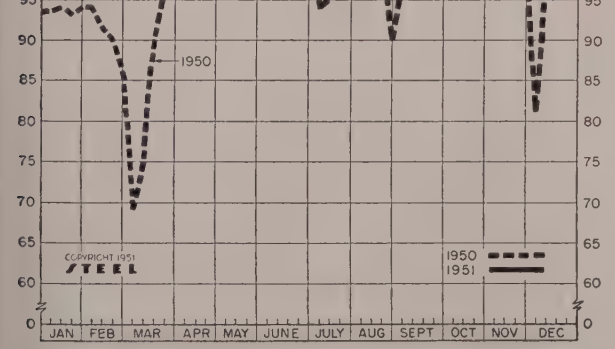
DEMAND—Pressure on the mills mounts daily. Defense and related requirements are rising steadily with corresponding reduction in supplies for the general trade. Steelmakers are booked well into third quarter on DO business, but they are only now setting up customers' quotas on regular accounts for April. Indications are allotments will be at least 10 per cent smaller than in March, and further cutbacks may be necessary due to the tonnage lost in the rail strike. Expectations are some easing in civilian goods requirements will be experienced soon with mandatory curtailment in production, including automobiles, reportedly actively under consideration in Washington.

ALLOCATIONS— Added light on what is in prospect for second quarter steel allocations may come this week. The NPA Steel Task Committee meets Feb. 13 and is expected to set up allocations at least through May on not only existing directives but on several new programs as well, such as for locomotives, ship and ship repairs, and petroleum industry requirements. Expectations are tonnage allotments for May and June will be on month-to-month basis, efforts appearing to be in the direction of shaping allocations in such fashion as to permit quick adoption of a Controlled Materials Plan, possibly as early as July.

PRODUCTS— All finished steel products, including specialties, are in tighter supply. Sheets, bars, plates and shapes are in most acute stringency in the carbon classifications. Alloy steels are notably short with conditions deteriorating as demand rises and supplies of critical alloying metals, such as nickel, molybdenum and tungsten tighten through government end-use regulations and curtailments.

PRICES— Most significant development pricewise revolves around imposition of ceiling prices on scrap by the Office of Price Stabilization. The ceilings, effected Feb. 7, roll back prices from $6 to $10 per ton on standard grades of scrap and up to $60 on specialties. Surprisingly, the government control action is greeted with relatively little criticism in the trade. The rollback is about in line with expectations and the ceilings are considered sufficiently high to encourage collections. In fact, the No. 1 heavy melting steel ceiling is only about $1.50 per ton under the prevailing price at Pittsburgh early in January. Otherwise the steel market is steady. STEEL's price composite on steelmaking scrap is now pegged at $44 under the government ceilings as compared with $48 a week ago, and $27.42 in the like week a year ago. The weighted index on finished steel products is holding at 171.92 as is the arithmetical composite at the revised figure of $106.32.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Feb. 10	Change	Same Week 1950	Same Week 1949
Pittsburgh	98.5	0.5*	95	97.5
Chicago	99.5	— 0.5*	100.5	100
Eastern Pa.	98.5	— 2.5	76	97
Youngstown	106	0	92	105
Wheeling	97	0	101	94.5
Cleveland	21.5	—55*	96.5	96
Buffalo	104	0	101.5	104
Birmingham	100	0	100	100
New England	85	— 7	80	89
Cincinnati	106	+ 2	101	102
St. Louis	88.5	— 2	84.5	89.5
Detroit	104.5	— 4.5	104	106
Western	103	0	88.5	..
Estimated national rate	97	— 4.5	91.5	100

Based on weekly steelmaking capacity of 1,999,035 net tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950; 1,843,516 tons for 1949.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 35 Production-Engineering News—p. 71

Composite Market Averages

	Feb. 8 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100) ..	171.92	171.92	171.92	156.13	106.82
Index in cents per lb.	4.657	4.657	4.657	4.230	2.894
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$106.32	$106.32*	$105.55	$93.00	$58.27
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	52.54	46.47	25.42
Basic Pig Iron, GT.....	52.16	52.16	52.16	45.97	24.75
Malleable Pig Iron, GT ...	53.27	53.27	53.27	47.27	26.04
Steelmaking Scrap, GT ..	44.00	48.00*	45.50	27.42	19.17

* Revised.

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Feb. 8 1951	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.70	3.70	3.70	3.45	2.25
Bars, H.R., Chicago	3.70	3.70	3.70	3.45	2.25
Bars, H.R., del. Philadelphia	4.18	4.18	4.18	3.93	2.57
Bars, C.F., Pittsburgh....	4.55	4.55	4.55	4.10–15	2.75
Shapes, Std., Pittsburgh ..	3.65	3.65	3.65	3.40	2.10
Shapes, Std., Chicago	3.65	3.65	3.65	3.40	2.10
Shapes, del. Philadelphia ..	3.90	3.90	3.90	3.46	2.215
Plates, Pittsburgh	3.70	3.70	3.70	3.50	2.25
Plates, Chicago	3.70	3.70	3.70	3.50	2.25
Plates, Coatesville, Pa. ...	4.15	4.15	4.15	3.60	2.25
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.50	2.25
Plates, Claymont, Del.	4.15	4.15	4.15	3.60	2.25
Sheets, H.R., Pittsburgh...	3.60–75	3.60–75	3.60–75	3.35	2.20
Sheets, H.R., Chicago	3.60	3.60	3.60	3.35	2.20
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.35	4.10	3.05
Sheets, C.R., Chicago	4.35	4.35	4.35	4.10	3.05
Sheets, C.R., Detroit	4.55	4.55	4.55	4.30	3.15
Sheets, Galv., Pittsburgh..	4.80	4.80	4.80	4.40	3.70
Strip, H.R., Pittsburgh...3.75–4.00		3.75–4.00	3.75–4.00	3.25	2.10
Strip, H.R., Chicago	3.50	3.50	3.50	3.25	2.10
Strip, C.R., Pittsburgh ...4.65–5.35		4.65–5.35	4.65–5.35	4.15	2.80
Strip, C.R., Chicago	4.90	4.90	4.90	4.30	2.90
Strip, C.R., Detroit 4.35–5.60		4.35–5.60	4.35–5.60	4.35–40	2.90
Wire, Basic, Pittsburgh ..4.85–5.10		4.85–5.10	4.85–5.10	4.50	2.75
Nails, Wire, Pittsburgh ..5.90–6.20		5.90–6.20	5.90–6.20	5.30	2.90
Tin plate, box, Pittsburgh.	$8.70	$8.70	$8.70	$7.50	$5.00

SEMIFINISHED

Billets, forging, Pitts. (NT)	$66.00	$66.00	$66.00	$63.00	$42.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts. ..	4.10–30	4.10–30	4.10–30	3.85	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$47.00	$26.25
Basic, Valley	52.00	52.00	52.00	46.00	25.25
Basic, del. Phila.	56.39	56.39	56.39	49.44	27.09
No. 2 Fdry, Pitts.	52.50	52.50	52.50	46.50	25.75
No. 2 Fdry, Chicago	52.50	52.50	52.50	46.50	25.75
No. 2 Fdry, Valley	52.50	52.50	52.50	46.50	25.75
No. 2 Fdry, Del. Phila. ...	56.89	56.89	56.89	49.94	27.59
No. 2 Fdry, Birm.	48.88	48.88	48.88	42.38	22.13
No. 2 Fdry (Birm.) del. Cin.	55.58	55.58	55.58	49.08	25.81
Malleable Valley	52.50	52.50	52.50	46.50	25.75
Malleable, Chicago	52.50	52.50	52.50	46.50	25.75
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	60.00	33.00
Ferromanganese, Etna, Pa..188.00		188.00	188.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt. Pitts...$45.00		$51.50	$46.50	$31.25	$20.00
No. 1 Heavy Melt. E. Pa..	43.50	47.50	45.00	23.50	18.75
No. 1 Heavy Melt. Chicago	43.50	45.00	45.00	27.50	18.75
No. 1 Heavy Melt. Valley..	45.00	51.25	46.25	31.25	20.00
No. 1 Heavy Melt. Cleve..	44.00	50.75	45.75	28.25	19.50
No. 1 Heavy Melt. Buffalo.	44.00	51.50	44.88	27.75	19.25
Rails, Rerolling, Chicago..	52.50	67.00	67.00	39.50	22.25
No. 1 Cast, Chicago	49.00*	62.00	62.00	40.50	20.00

*F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn., Connisvl...$14.75		$14.75	$14.75	$13.25	$7.50
Beehive, Fdry., Connisvl...	17.50	17.50	17.50	15.50	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	21.00	13.00

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	18.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	9.75	8.25
Lead, St. Louis	16.80	16.80	16.80	11.80	6.35
Tin, New York 182.50		182.50	173.00	74.50	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex. ...	42.00	42.00	32.00	27.25	14.50
Nickel, refinery, duty paid.	50.50	50.50	50.50	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	B
Bethlehem, Pa. B2	$54.00	$54.50	$55.00	$
Brooklyn, N.Y., del.	....	58.78	59.29	
Newark, del.	56.63	57.13	57.63	
Philadelphia, del.	56.39	56.89	57.39	
Birmingham District				
Alabama City, Ala. R2	48.38	48.88	....	
Birmingham R2	48.38	48.88	....	
Birmingham S9	48.38	48.88	....	
Woodward, Ala. W15	48.38	48.88	....	
Cincinnati, del.	....	55.58	....	
Buffalo District				
Buffalo R2	52.00	52.50	53.00	
Buffalo H1	52.00	52.50	53.00	
Tonawanda, N.Y., W12	52.00	52.50	53.00	
No. Tonawanda, N.Y., T9	....	52.50	53.00	
Boston, del.	61.26	61.76	62.20	
Rochester, N.Y., del.	54.63	55.13	55.63	
Syracuse, N.Y., del.	55.58	56.08	56.58	
Chicago District				
Chicago I-3	52.00	52.50	52.50	
Gary, Ind. U5	52.00	....	52.50	
Indiana Harbor, Ind. I-2	52.00	....	52.50	
So. Chicago, Ill. W14	52.00	52.50	52.50	
So. Chicago, Ill., Y1	52.00	52.50	52.50	
So. Chicago, Ill. U5	52.00	....	52.50	
Milwaukee, del.	53.89	54.39	54.39	
Muskegon, Mich., del.	....	57.98	57.98	
Cleveland District				
Cleveland A7	52.00	52.50	52.50	
Cleveland R2	52.00	52.50	52.50	
Akron, del. from Cleve.	54.39	54.89	54.89	
Lorain, O. N3	52.00	....	....	
Duluth I-3	....	....	52.50	
Erie, Pa. I-3	52.00	52.50	52.50	
Everett, Mass. E1	....	53.25	53.75	
Fontana, Calif. K1	58.00	58.50	....	
Geneva, Utah G1	52.00	52.50	....	
Seattle, Tacoma, Wash., del.	....	60.20	....	
Portland, Oreg., del.	....	60.20	....	
Los Angeles, San Francisco, del.	59.70	60.20	....	
Granite City, Ill. K7	53.90	54.40	54.90	
St. Louis, del. (inc. tax)	54.65	55.15	55.65	
Ironton, Utah C11	52.00	52.50	....	
Lone Star, Tex. L6	48.00	*48.50	48.50	
Minnequa, Colo. C10	54.00	55.00	55.00	
Pittsburgh District				
Neville Island, Pa. P6	....	52.50	52.50	
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	....	53.69	53.69	
McKees Rocks, del.	....	53.45	53.45	
Lawrenceville, Homestead, McKeesport, Monaca, del.	....	53.94	53.94	
Verona, del.	....	54.40	54.40	
Brackenridge, del.	....	54.63	54.63	
Bessemer, Pa. U5	52.00	....	52.50	
Clairton, Rankin, So. Duquesne, Pa. U5	52.00	....	....	
McKeesport, Pa. N3	52.00	....	....	
Monessen, Pa. P7	54.00	....	....	
Sharpsville, Pa. S6	....	....	52.50	
Steelton, Pa. B2	54.00	54.50	55.00	
Swedeland, Pa. A3	56.00	56.50	57.00	
Toledo, O. I-3	52.00	52.50	52.50	
Cincinnati, del.	57.01	57.51	....	
Troy, N.Y. R2	54.00	54.50	55.00	
Youngstown District				
Hubbard, O. Y1	52.00	52.50	52.50	
Youngstown Y1	52.00	52.50	52.50	
Youngstown U5	52.00	....	....	
Mansfield, O., del.	56.26	56.76	56.76	

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grad 2.25%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% ar

Manganese: Add 50 cents per ton for each 0.50% manganese ov or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per t each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1 .....
Buffalo H1 .....

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; each 0.5% Mn over 1%; $1 for each 0.045% max. P)

Niagara Falls, N.Y. P15 .....
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2 .....
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2
Wenatchee, Wash., O.H. & Fdry., frt. allowed K2 .....

CHARCOAL PIG IRON, Gross Ton

(Low phos, semi-cold blast; differential charged for silicon base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3 .....

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7 .....
Steelton, Pa. B2 .....
Philadelphia delivered .....
Troy, N.Y. R2 .....

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Feb. 8, 1951; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

NGOTS, Carbon, Forging (NT)
ona,Calif. K1 ...$79.00
ua,ll. Pa. U5 .....52.00

NGOTS, Alloy (NT)
ell it R7 .....$54.00
ona,Calif. K1 ....80.00
on,Tex. S5 .....62.00
ind,Pa. C18 .....54.00
ua,ll. Pa. U5 .....54.00

LETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
es mer,Pa. U5 ....$56.00
ta on,Pa. U5 .....56.00
ny,Aly. T2 .....56.00
ni eld,Ala. T2 .....56.00
on na,Calif. K1 ....75.00
ou Ind. U5 .....56.00
ch town,Pa. B2 ....56.00
ac wanna,N.Y. B2 ..56.00
an all,Pa. U5 .....56.00
s icago,Ill. U5 ....56.00
o. aquesne,Pa. U5 ..56.00

Carbon, Forging (NT)
es mer,Pa. U5 ....$66.00
ll lo R2 .....66.00
un n,O. R2 .....66.00
a on,Pa. U5 .....66.00
e and R2 .....66.00
ge ohocken,Pa. A3 ..73.00
it R7 .....69.00
ny,Ala. T2 .....66.00
ni eld,Ala. T2 .....66.00
on na,Calif. K1 ....85.00
a Ind. U5 .....66.00
en a,Utah G1 .....66.00
c on,Tex. S5 .....74.00
ch town,Pa. B2 ....66.00
ha wanna,N.Y. B2 .66.00
pi ngeles B3 .....85.00
an all,Pa. U5 .....66.00
ale B3 .....85.00
ch icago R2, U5, W14.66.00
. aquesne,Pa. U5 ..66.00
s nFrancisco B3 ..85.00

Alloy, Forging (NT)
e ehem,Pa. B2 ...$70.00
l lo R2 .....70.00
n n,O. R2 .....70.00
n n,O.(29) T7 ....66.00
s ohocken,Pa. A3 ..77.00
it R7 .....73.00
on na,Calif. K1 ....89.00
a Ind. U5 .....70.00
c on,Tex. S5 .....78.00
ch arbor,Ind. Y1 ...70.00
s town,Pa. B2 ....70.00
ha wanna,N.Y. B2..70.00
pi ngeles B3 .....90.00
an illon,O. R2 .....70.00
ale nd,Pa. C18 .....70.00
all,Pa. U5 .....70.00
. icago R2,U5,W14.70.00
. aquesne,Pa. U5 ..70.00
s hers,O. Y1 .....70.00
e en,O. C17 .....70.00

TUBES, SEAMLESS TUBE (NT)
n n,O. R2 .....$82.00
e land R2 .....82.00
on na,Calif. K1 ...103.00
a Ind. U5 .....82.00
an illon,O. R2 .....82.00
. icago,Ill. R2 ....82.00
. aquesne,Pa. U5 ..82.00

WIRE BARS (NT)
on na,Calif. K1 ...$89.00

BILLETS
ip ippa,Pa. J5 .....3.45
an all,Pa. U5 .....3.35
n en,O. R2 .....3.35
ng stown R2, U5 ...3.35

SKELP, RODS
. amaCity,Ala. R2 ..4.10
. lo W12 .....4.10
e land A7 .....4.10
ra ra,Pa. A7 .....4.10
ni eld,Ala. T2 .....4.10
on na,Calif. K1 ....4.90
c on,Tex. S5 .....4.50
s town,Pa. B2 ....4.10
,Ill. A7 .....4.10
pi ngeles B3 .....4.90
e equa,Colo. C10 ...4.35
s ssen,Pa. P7 .....4.30
ch ohawanda,N.Y.B11 4.10
b burg,Calif. C11 ....4.75
s mouth,O. P12 ....4.30
fl ling,N.J. R5 .....4.20
. icago,Ill. R2 .....4.10
s rowsPoint,Md. B2 ..4.20
ng ng,Ill.(1) N15 ....4.10
s hers,O. Y1 .....4.10
in nce,Calif. C11 ....4.90
e ester A7 .....4.40

STRUCTURALS

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 .....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah G1 .....3.65
Houston,Tex. S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.25
Lackawanna,N.Y. B2 .3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ....4.95
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5, W14.3.65
So.SanFrancisco B3 ....4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 ....3.90

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 .....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 .5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 ....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah G1 .....5.50
Ind.Harbor,Ind. I-2 ...5.50
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00

Wide Flange
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 ....5.45

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ...4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 .....4.45

BEARING PILES
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1 ..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah G1 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy
Claymont,Del. W16 ....4.85
Coatesville,Pa. L7 ....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....4.75
SparrowsPoint,Md. B2..4.75

FLOOR PLATES
Cleveland J5 .....4.75
Conshohocken,Pa. A3 ..4.75
Harrisburg,Pa. C5 ....5.95
Ind.Harbor,Ind. I-2 ...4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky.(15) A10 ..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. W16 ....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 ....4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 .4.30
Gary,Ind. U5 .....3.70
GraniteCity,Ill. G4 ....4.40
Geneva,Utah G1 .....3.70
Harrisburg,Pa. C5 ....4.95
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5, W14.3.70
SparrowsPoint,Md. B2..3.70
Steubenville,O. W10 ...3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 ....4.00
Youngstown R2, U5, Y1.3.70

PLATES, Carbon A.R.
Fontana,Calif. K1 ....5.45
Geneva,Utah G1 .....4.85

PLATES, Wrought Iron
Economy,Pa. B14 ....8.60

PLATES, Ingot Iron
Asland,c.l.(15) A10 ...3.95
Ashland,lcl.(15) A10 ...4.45
Cleveland,c.l. R2 ....4.30
Warren,O. c.l. R2 ....4.30

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill.(1) L1 .....3.95
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 ....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2 Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11.3.70
Pittsburg,Calif. C11 ...4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2, U5, W14.3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFran.,Cal. B3 ...4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ...4.40
Weirton,W.Va. W6 ....3.85
Youngstown R2, U5 ...3.70

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 .....3.70
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 .....5.05
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.65
Fontana,Calif. K1 ....5.35
Gary,Ind. U5 .....4.30
Houston,Tex. S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14.4.30
So.Duquesne,Pa. U5 ...4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.55
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ...5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ...5.55
So.SanFrancisco B3 ...6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.55
BeaverFalls,Pa.M12,R2 .4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 ....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ...4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 ....4.55
Hammond,Ind. L2, M13.4.55
Hartford,Conn. R2 .....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 ....5.10
Massillon,O. R2, R8 ....4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 .....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 .....5.10
Readville,Mass. C14 ...5.10
St. Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 ....4.55
SpringCity,Pa.(5) K3 ...5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown F3, Y1 ...4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12 ...5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 .....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ...5.40
Mansfield,Mass. B5 ....5.85
Massillon,O. R2, R8 ...5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 ....5.75
Youngstown F3, Y1 ....5.40

RAIL STEEL BARS
ChicagoHts.(3,4)I-2, C2.4.75
Franklin,Pa.(3, 4) F5 ...4.75
FortWorth,Tex.(26) T4..5.40
Huntngtn,W.Va.(3) W7 .5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ...4.75
Williamsport(3) S19 ...5.00
Williamsport(4) S19 ...5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover,(Eng.Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1 .12.25
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt) L5.14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ..13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Alton,Ill.(6) L1 .....3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ...4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston,Tex. S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ...3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.20
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Niles,Calif. P1 .....5.05
Pittsburgh J5 .....3.70
SandSprings,Okla. S5 ..4.60
Seattle B3, N14 .....4.45
So.Chicago,Ill. R2 ....3.70
So.Duquesne,Pa. U5 ...3.70
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Youngstown R2, U5 ...3.70

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ..4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2..4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ..3.60
Butler,Pa. A10 .....3.60
Cleveland J5, R2 .....3.60
Conshohocken,Pa. A3 ..4.00
Detroit M1 .....4.40
Ecorse,Mich.(8) G5 ...3.80
Fairfield,Ala. T2 .....3.60
Fontana,Calif. K1 .....4.55
Gary,Ind. U5 .....3.60
Geneva,Utah G1 .....3.70
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1.3.60
Irvin,Pa. U5 .....3.60
Lackawanna,N.Y. B2 ...3.60
Munhall,Pa. U5 .....3.60
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 .....3.60
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ...3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa. A4..3.75
Youngstown U5, Y1 ..3.60

SHEETS, H-R (19 gage)
AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H-R (14-ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ..5.65
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind. I-2 ....5.40
IndianaHarbor,Ind. Y1..5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ...5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....5.40
Weirton,W.Va. W6 ....5.75
Youngstown U5 .....5.40
Youngstown Y1 .....5.90

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.55
Ecorse,Mich. G5 .....7.10
Fontana,Calif. K1 ....7.50
Gary,Ind. U5 .....6.55
IndianaHarbor,Ind. Y1 .7.05
IndianaHarbor,Ind. I-2 .6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 ...6.55
Pittsburgh J5 .....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 .....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10 .....4.35
Cleveland J5, R2 .....4.35
Ecorse,Mich. G5 .....4.55
Fairfield,Ala. T2 .....4.35
Follansbee,W.Va. F4 ..5.35
Fontana,Calif. K1 .....5.30
Gary,Ind. U5 .....4.35
GraniteCity,Ill. G4 .....5.05
Ind.Harbor,Ind. I-2, Y1..4.35
Irvin,Pa. U5 .....4.35
Lackawanna,N.Y. B2 ..4.35
Middletown,O. A10 ....4.35
Pittsburg,Calif. C11 ....5.30
Pittsburgh J5 .....4.35
SparrowsPoint,Md. B2..4.35
Steubenville,O. W10 ....4.35
Warren,O. R2 .....4.35
Weirton,W.Va. W6 ....4.35
Youngstown Y1 .....4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala., R2 ..4.80
Ashland,Ky.(8) A10 ....4.80
Canton,O. R2 .....4.80
Dover,O. R1 .....5.50
Fairfield,Ala. T2 .....4.80
Gary,Ind. U5 .....4.80
GraniteCity,Ill. G4 .....5.50
Ind.Harbor,Ind. I-2 ....4.80
Irvin,Pa. U5 .....4.80
Kokomo,Ind.(13) C16 ..5.20
MartinsFerry,O. W10 ..4.80
Niles,O. N12 .....6.00
Pittsburg,Calif. C11 ....5.55
SparrowsPoint,Md. B2 ..4.80
Steubenville,O. W10 ....4.80
Torrance,Calif. C11 ...5.55
Weirton,W.Va. W6 ....4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5 .....7.20
SparrowsPoint(39) B2 ..6.75

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.35
Irvin,Pa. U5 .....5.35
Kokomo,Ind.(13) C16 ..5.75
Niles,O. N12 .....6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10 .....5.05
Middletown,O. A10 ....5.05

SHEETS, Electro Galvanized

Cleveland R2 (28) 5.65
Niles,O. R2 (28) 5.65
Weirton,W.Va. W6 ....5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2 ...5.70

SHEETS, Drum Body

Pittsburg,Calif. C11 ....4.30
Torrance,Calif. C11 ....4.30

SHEETS, Well Casing

Fontana,Calif. K1 ....5.10
Torrance,Calif. C11 ....5.10

BLUED Stock, 29 Ga.

Yorkville,O. W10 .....6.80
Follansbee,W.Va.(23)F4 6.85

ROOFING SHORT TERNES (8 lb coated)

Gary,Ind. U5 .....9.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2 ....$7.60
Gary,Ind. U5 .....7.50
Irvin,Pa. U5 .....7.50
SparrowsPoint,Md. B2 ..7.60
Yorkville,O. W10 .....7.50

SHEETS, Lt. Coated Ternes, 6lb

Yorkville,O. W10 ....$8.40

SHEETS, Mfg. Ternes, 8 lb (Comercial Quality)

Gary,Ind. U5 .....$9.50
Yorkville,O. W10 .....9.50

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10 5.20
Gary,Ind. U5 .....5.20
Mansfield,O. E6 .....6.05
Middletown,O. A10 .....5.20
Niles,O. N12 .....6.00
Weirton,W.Va. W6 ....5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....5.60

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...4.65
Cleveland R2 .....4.65
Gary,Ind. U5 .....4.65
GraniteCity,Ill. G4 ....5.35
Ind.Harbor,Ind. I-2 ....4.65
Irvin,Pa. U5 .....4.65
Middletown,O. A10 .....4.65
Youngstown Y1 .....4.65

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland A10	5.60	...
Canton,O. R2 ...	5.65	6.10
Fairfield,Ala. T2.	5.60	5.85
Gary U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo C16	6.25	...
MartinsFy,O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2..	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10 .....5.85
Fairfield,Ala. T2 .....5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10 .....3.85
Cleveland R2 .....4.20
Ind.Harbor,Ind. I-2 ...3.85
Warren,O. R2 .....4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....4.95
Middletown,O. A10 ....4.85
Warren,O. R2 .....4.95

SHEETS, Galvanived Ingot Iron No. 10 flat

Ashland,Ky.(8) A10 ...5.05
Canton,O. R2 .....5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....5.30
Middletown,O. A10 ....5.30

SHEETS, ALUMINIZED

Butler,Pa. A10 .....8.15

TIN PLATE, American Coke (Base Box) 1.25 lb 1.50 lb

Aliquippa J5 ....$8.45 $8.70
Fairfield,Ala. T2. 8.55 8.80
Gary U5 ..... 8.45 8.70
Ind.Har. I-2, Y1. 8.45 8.70
Irvin,Pa. U5 .... 8.45 8.70
Pitts.,Cal. C11 .. 9.20 9.45
Sp.Pt.,Md. B2 ... 8.55 8.80
Warren R2 ..... 8.45 8.70
Weirton W6 .... 8.45 8.70
Yorkville,O. W10. 8.45 8.70

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$6.25
Fairfield,Ala. T2 .....6.35
Gary,Ind. U5 .....6.25
GraniteCity,Ill. G4 ....6.45
Ind.Harbor,Ind. I-2, Y1.6.25
Irvin,Pa. U5 .....6.25
Niles,O. R2 .....6.25
Pittsburg,Calif. C11 ...7.00
SparrowsPoint,Md. B2 .6.35
Warren,O. R2 .....6.25
Weirton,W.Va. W6 ....6.25
Yorkville,O. W10 .....6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4 ..5.85
Gary,Ind. U5 .....5.85
GraniteCity,Ill. G4 ....6.05
Ind.Harbor,Ind. Y1 ....5.30
Irvin,Pa. U5 .....5.85
Yorkville,O. W10 .....6.15

STRIP, Hot-Rolled, High-Strength Low-Alloy

Bessemer,Ala. T2 .....5.30
Conshohocken,Pa. A3 ..5.55
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.30
Fontana,Cal. K1 .....6.20
Gary,Ind. U5 .....5.30
Ind.Harb.,Ind. I-2 ....5.30
IndianaHarbor,Ind. Y1..5.80
Lackawanna,N.Y. B2 ..4.95
LosAngeles(25) B3 ....6.05
Seattle B3 .....6.30
Sharon,Pa. S3 .....5.40
So.SanFrancisco(25) B3.6.05
SparrowsPoint,Md. B2 ..4.95
Warren,O. R2 .....5.30
Weirton,W.Va. W6 ....5.75
Youngstown Y1 .....5.80
Youngstown U5 .....5.30

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15 10.75
Carnegie,Pa. S18 .....10.60
Cleveland A7 .....10.00
Dover,O. G6 .....10.50
Fontana,Calif. K1 ....11.65
Harrison,N.J. C18 ....10.60
Midland,Pa. C18.....10.60
NewBritn,Conn.(10)S15 10.75
Pawtucket,R.I.(11) N8.10.75
Pawtucket,R.I.(12) N8.11.05
Sharon,Pa. S3 .....10.60
Worcester,Mass. A7 ..10.30
Youngstown C8 .....10.60

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland J5 .....6.70
Cleveland A7 .....6.55
Dover,O. G6 .....7.30
Fontana,Calif. K1 ....6.95
Lackawanna,N.Y. B2 ..6.40
Sharon,Pa. S3 .....6.55
SparrowsPoint,Md. B2 .6.40
Warren,O. R2 .....6.55
Weirton,W.Va. W6 ....7.20
Youngstown Y1 .....7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..3.50
Alton,Ill.(1) L1 .....3.75
Ashland,Ky(8) A10 ....3.50
Atlanta A11 .....4.05
Bessemer,Ala. T2 .....3.50
Bridgeprt,Conn.(10) S15.4.00
Buffalo(27) R2 .....3.50
Butler,Pa. A10 .....3.50
Carnegie,Pa. S18 .....4.00
Conshohocken,Pa. A3 ..3.90
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.80
Fairfield,Ala. T2 .....3.50
Fontana,Calif. K1 .....4.75
Gary,Ind. U5 .....3.50
Houston,Tex. S5 .....4.90
Ind.Harbor,Ind. I-2, Y1.3.50
Johnstown,Pa.(25) B2 ..3.50
KansasCity,Mo.(9) S5 ..4.10
Lackawanna,N.Y.(32)B2 3.50
LosAngeles B3 .....4.25
Milton,Pa. B6 .....4.00
Minnequa,Colo. C10 ....4.55
NewBritain(10) S15 ...4.00
N.Tonawanda,N.Y. B11.3.50
Pittsburg,Calif. C11 ...4.25
Riverdale,Ill. A1 .....3.50
SanFrancisco S7 .....4.85
Seattle B3, N14 .....4.50
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ...3.50
So.SanFrancisco B3 ....4.25
SparrowsPoint,Md. B2..3.50
Torrance,Calif. C11 ....4.25
Warren,O. R2 .....3.50
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa. A4..3.75
Youngstown U5, Y1 ...3.50

STRIP, Electro Galvanized

Dover,O. G6 .....5.50
Warren,O. T5 .....5.25
Weirton,W.Va. W6 ....4.65
Youngstown C8 .....5.25

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C
Berea,O. C7	...	6.80	7.40	9.35
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35
Bristol,Conn. W1	...	...	7.70	9.65
Carnegie,Pa. S18	...	6.80	7.40	9.35
Cleveland A7	4.65	6.45	7.40	9.35
Dearborn,Mich. D3	5.60	7.05	7.65	...
Detroit D2	5.60	6.65	7.25	...
Dover,O. G6	5.50	6.80	7.40	9.35
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50
Harrison,N.J. C18	...	...	7.70	9.65
Mattapan,Mass. T6	5.50	6.75	7.70	9.65
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35
NewCastle,Pa. B4	5.35	6.80	7.40	9.35
NewCastle,Pa. E5	5.50	6.80	7.40	9.35
NewHaven,Conn. D2	5.85	6.75	7.35	...
NewYork W3	...	7.10	7.70	9.65
Pawtucket,R.I. N8:				
Cleve.-or-Pitts.Base	...	6.80	7.40	9.35
Worcester,Base	5.85	7.10	7.70	9.65
Sharon,Pa. S3	5.35	6.80	7.40	9.35
Trenton,N.J. R5	...	7.10	7.70	9.65
Wallingford,Conn. W2	5.85	6.75	7.35	9.30
Weirton,W.Va. W6	5.35	6.80	7.40	9.35
Worcester,Mass. A7	4.95	6.75	7.70	9.65
Worcester,Mass. T6	5.50	6.75	7.70	9.65
Youngstown C8	...	6.80	7.40	9.35
Spring Steel (Tempered)				
Trenton,N.J. R5	...	...	10.30	12.50
Harrison,N.J. C18	...	...	10.30	12.50
NewYork W3	...	...	10.30	12.50

STRIP, Cold-Rolled Carbo

Anderson,Ind.(40) G6 .
Berea,O. C7 .....
Bridgeprt,Conn.(10) S15
Butler,Pa. A10 .....
Cleveland A7, J5 .....
Dearborn,Mich. D3 ...
Detroit D2 .....
Detroit M1 .....
Dover,O.(40) G6 .....
Ecorse,Mich. G5 .....
Follansbee,W.Va. F4 .
Fontana,Calif. K1 ....
FranklinPark,Ill.(40)T6
Ind.Harbor,Ind. I-2 ..
Lackawanna,N.Y. B2 .
LosAngeles C1 .....
Mattapan,Mass. T6 ...
Middletown,O. A10 ...
NewBritain(10) S15 .
NewCastle,Pa. B4 .....
NewCastle(40) E5 ...
NewHaven,Conn. D2 .
NewHaven,Conn. A7 .
Pawtucket,R.I. R3 ...
Pawtucket,R.I.(21) N8
Riverdale,Ill.(40) A1 .
Rome,N.Y. R6 .....
Sharon,Pa. S3 .....
SparrowsPoint,Md. B2
Trenton,N.J. R5 .....
Wallingford,Conn. W2
Warren,O.(40) T5 ....
Warren,O. R2 .....
Weirton,W.Va. W6 .
Youngstown C8, (40)
Youngstown Y1 .....

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S1
Carnegie,Pa. S18 ...
Fontana,Calif. K1 ...
Gary,Ind. U5 .....
Houston,Tex. S5 .....
KansasCity,Mo. S5 ...
Midland,Pa. C18 .....
NewBritn,Conn.(10) S1
Sharon,Pa. S8 .....
Youngstown U5 .....

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths 1/2c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths).	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)....	...	6.75	7.25	...	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths 1/2c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.Mills Co.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tube
G4 Granite City Steel
G5 Great Lakes Stee
G6 Greer Steel Co.

H1 Hanna Furnace
H4 Heppenstall Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron C
I-4 Ingersoll Steel D Borg-Warner Cor

J1 Jackson Iron & St
J3 Jessop Steel Co.
J4 Johnson Steel & W
J5 Jones & Laughlin
J6 Joslyn Mfg. & S
J7 Judson Steel Cor
J8 Jersey Shore Stee

K1 Kaiser Steel Corp
K2 Keokuk Electro-M
K3 Keystone Drawn
K4 Keystone Steel &
K7 Koppers Co. Inc.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric
L5 Lockhart Iron &
L6 Lone Star Steel C
L7 Lukens Steel Co.

Hot-Rolled Ingot Iron

d,Ky.(8) A10	3.75
,O. R2	4.10

Cold-Rolled Ingot Iron

,O. R2	5.25

COOPERAGE HOOP

A11	4.05
ale,Ill. A1	3.90
Pa. S3	4.15
stown U5	3.75

Merchant Quality

(3 gage)	An'ld	Galv.
naCity R2	5.70	5.95
ppa J5	5.70	6.15
a A11	5.95	6.40
rville(19)K4	5.70	6.15
o W12	4.85	...
and A7	5.70	6.15
ordsville M8	5.95	6.40
a A7	5.70	6.15
A7	5.70	6.15
ld T2	5.70	6.15
on,Tex. S5	6.10	6.55
own B2	5.70	6.15
ll, A7	5.70	6.15
sCy,Mo. S5	6.30	6.75
o C16	5.80	6.05
geles B3	6.65	...
ua C10	5.95	6.45
en P7	5.95	6.40
W12	5.15	...
alif. C11	6.65	6.80
h.(18)P12	6.10	6.60
A7	5.70	6.15
ago R2	5.70	5.95
ran. C10	6.65	7.10
wsPt. B2	5.80	6.25
g,Ill.(1)N15	5.70	6.15
ers,O. Y1	5.70	6.15
ace,Cal. C11	6.65	...
ster A7	6.00	6.45

(16 gage)	An'ld Stone	Galv. Stone
ppa J5	10.15	11.85
rville(1) K4	10.25	11.95
and A7	10.25	12.15
rdsvle M8	10.30	12.00
ria,O. S1	10.40	13.00
own B2	10.25	12.15
o C16	10.25	11.95
ua C10	10.40	12.40
r,Mass.W12	10.25	12.15
Cal. C11	10.60	12.50
h.(18) P12	10.55	12.30
wsPt. B2	10.35	12.25
egan A7	10.25	12.15

WIRE

	(A)	(B)
rville,Ill. K4	8.55	8.80
o W12	8.55	8.80
and A7	8.55	8.80
a,Pa. A7	8.55	8.80
ria,O. S1	8.85	9.10
own,Pa. B2	8.55	8.80
sen,Pa. P16	8.55	8.80
sen,Pa. P7	8.80	9.05
aven A7	8.85	9.10
r,Mass. W12	8.85	9.10
outh,O. P12	8.55	8.80
ng,N.J. R5	8.85	9.10
wsPt. B2	8.65	8.90
ers,O. Y1	8.55	8.80
on,N.J. A7	8.85	9.10
egan,Ill. A7	8.55	8.80
ster J4, T6	8.85	9.10

low and Mild Plow.
mproved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	5.10
Alton,Ill.(1) L1	4.85
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.85
Chicago W13	4.85
Cleveland A7, C20	4.85
Crawfordsville,Ind. M8	5.10
Donora,Pa. A7	4.85
Duluth A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O.(24) S1	5.35
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark, 6-8ga. I-1	5.50
No. Tonawanda B11	4.85
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7	5.85
Crawfordsville,Ind. M8	6.20
Detroit D2	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	6.20
Massillon,O. R8	5.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	6.50
Pawtucket,R.I.(12) N8	6.85
Trenton,N.J. R5	6.15
Worcester A7	6.15
Worcester T6	6.50
Worcester W12	6.65

WIRE, Fine & Weaving(8" Coils)

Bartonville,Ill.(1) K4	8.90
Buffalo W12	8.90
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville,Ind. M8	8.95
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.90
Kokomo,Ind. C16	8.90
Monessen,Pa. P16	8.90
Palmer,Mass. W12	9.20
Portsmouth,O. P12	8.90
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. A7, T6	9.20

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.50
Monessen,Pa. P16	8.50
Roebling,N.J. R5	8.80
SparrowsPoint,Md. B2	8.25

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.90
Monessen,Pa. P16	11.40
Roebling,N.J. R5	11.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill.(1) L1	6.25
Bartonville,Ill.(1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth A7	6.25
Fostoria,O. S1	6.25
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Milbury,Mass.(12) N6	8.05
Monessen,Pa. P7, P16	6.25
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	6.55
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	6.85
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7, T6, W12	6.55
Worcester,Mass. J4	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	6.20
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	7.10
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	7.10
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Worcester,Mass. A7	6.20

WOVEN FENCE, 9-15½ Ga. Col

AlabamaCity,Ala. R2	126
Ala.City,Ala.,17-18ga.R2	213
Aliquippa,Pa.9-14½ga.J5	130
Atlanta A11	133
Bartonville,Ill.(19) K4	130
Crawfordsville,Ind. M8	132
Donora,Pa. A7	130
Duluth A7	130
Fairfield,Ala. T2	130
Houston,Tex. S5	138
Johnstown,Pa. B2	130
Johnstown,17ga.,6" B2	204
Johnstown,17ga.,4" B2	207
Joliet,Ill. A7	130
KansasCity,Mo. S5	142
Kokomo,Ind. C16	132
Minnequa,Colo. C10	138
Monessen,Pa. P7	135
Pittsburg,Calif. C11	153
Portsmouth,O.(18) P12	137
Rankin,Pa. A7	130
So.Chicago,Ill. R2	126
Sterling,Ill.(1) N15	130

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	140
Duluth A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	140
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago R2	140
Tonawanda B12	140
Williamsport,Pa. S19	150

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	136
Aliquippa,Pa. J5	140
Atlanta A11	143
Bartonville,Ill.(19) K4	143
Crawfordsville M8	145
Donora,Pa. A7	140
Duluth,Minn. A7	140
Fairfield,Ala. T2	140
Houston,Tex. S5	148
Johnstown,Pa. B2	140
Joliet,Ill. A7	140
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	146
Monessen,Pa. P7	145
Pittsburg,Calif. C11	160
Portsmouth,O.(18) P12	147
Rankin,Pa. A7	140
So.Chicago,Ill. R2	136
So.SanFran.,Calif. C10	160
SparrowsPoint,Md. B2	142
Sterling,Ill.(1) N15	140

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill.(19) K4	123
Chicago W13	123
Crawfordsville M8	132
Donora,Pa. A7	123
Duluth A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill.(1) N15	123

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	6.10
Bartonville,Ill.(19) K4	5.95
Crawfordsville,Ind. M8	6.30
Donora,Pa. A7	5.95
Duluth A7	5.95
Johnstown,Pa. B2	5.95
Joliet,Ill. A7	5.95
Kokomo,Ind. C16	6.05
Minnequa,Colo. C10	6.20
Pittsburg,Calif. C11	6.90
Portsmouth,O. P12	6.25
Rankin,Pa. A7	5.95
So.Chicago,Ill. R2	6.10
SparrowsPoint,Md. B2	6.05
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	6.25

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$7.35
Wheeling,W.Va. W10	7.15

NAILS & STAPLES, Stock To dealers & mfrs. (7)

	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	130
Cleveland A9	125
Crawfordsville,Ind. M8	122
Donora,Pa. A7	118
Duluth A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburgh,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	6.15
Youngstown R2	6.15

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(32) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.10

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. U5	4.50
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

JOINT BARS

Bessemer,Pa. U5	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	4.70
Joliet,Ill. U5	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

AXLES

Ind.Harbor,Ind. S18	5.60
Johnstown,Pa. B2	5.60

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	23.00	13.5W,4Cr,3V	140.00
Extra Carbon	27.00	18W,4Cr,2V,9Co	217.50
Spec. Carbon	32.50	19W,4Cr,2V,7Co	217.50
Oil Hardening	35.00	18.25W,4.25Cr,1V,4.75Co	185.50
Cr Hot Wrk	35.00	20.25W,4.25Cr,1.6V,12.25Co	323.00
Hi-Carbon-Cr	63.50	1.5W,4Cr,1V,8.5Mo	78.50
18W,4Cr,1V	123.50	6.4W,4.5Cr,1.9V,5Mo	87.00
18W,4Cr,2V	138.00	6W,4Cr,3V,6Mo	109.50

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, U4, V2, V3.

y to Producers

cLouth Steel Corp.
ahoning Valley Steel
edart Co.
ercer Tube & Mfg. Co.
id-States Steel & Wire
idvale Co.
oltrup Steel Products
onarch Steel Co.
cInnes Steel Co.

ational Supply Co.
ational Tube Co.
elsen Steel & Wire Co.
ewEng.HighCarb.Wire
ewman-Crosby Steel
iles Rolling Mill Co.
rthwst. Steel Roll.Mills
orthwestern S.&W. Co.
ew Delphos Mfg. Co.

iver Iron & Steel Corp.
regon Steel Mills

acific States Steel Corp.
acific Tube Co.
oenix Iron & Steel Co.
grim Drawn Steel
ittsburgh Coke&Chem.
ittsburgh Steel Co.
ittsburgh Tube Co.
lak Steel Co.

P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
P5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield,S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel

T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.

U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.

V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Corp.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga & heavier.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (elec. furn. billet, 5.40c); to consumers, 6.15c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	29.0	1.5	+0.5	+3.5
¼	6.0	0.42	28.5	26.5	23.5	+1.0	+3.0	+6.0
⅜	6.0	0.57	23.5	21.5	18.5	+7.0	+9.0	+12.0
½	8.5	0.85	36.0	34.0	35.0	14.0	12.0	13.0
¾	11.5	1.13	39.0	37.0	38.0	18.0	16.0	17.0
1	17.0	1.68	41.5	39.5	40.5	21.5	19.5	20.5
1¼	23.0	2.28	42.0	44.0	41.0	22.0	24.0	21.0
1½	27.5	2.78	42.5	41.5	41.5	23.0	21.5	22.0
2	37	3.68	48.0	41.0	42.0	23.5	21.5	22.5
2½	58.5	5.82	43.5	41.5	42.5	24.0	22.0	23.0
3	76.5	7.82	43.5	41.5	42.5	24.0	22.0	23.0

Column A: Etna, Pa. N2; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4". Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y1; Alton, Ill. (Gary base) L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 3½% on ⅛", plus 2½% on ¼", plus 9% on ⅜"; Sharon, Pa. M6, plus 0.5 on ⅛", 1 point lower on ½", ¾", 1¼ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 16½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½ points lower on 1¼", 2 points lower on 1½" and 2", 1½ points lower on 2½" and 3"; Etna, Pa. N2 and 18½% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	9.5	29.5	9.5
2½	58.5	5.82	32.5	12.5	32.5	12.5
3	76.5	7.62	32.5	12.5	32.5	12.5
3½	92.0	9.20	34.5	14.5	34.5	14.5
4	$1.09	10.89	34.5	14.5	34.5	14.5
5	1.48	14.81	37.0	17.0	37.0	17.0
6	1.92	19.18	37.0	17.0	37.0	17.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain, N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mil; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	12	24.35	29.82	24.50	28.84
2¼	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates—Carbon Base 10%	Plates—Carbon Base 20%	Strip—Cold-Rolled Carbon Base Both Sides 10%	Sheets—Carbon Base 10%	Sheets—Carbon Base 20%	Sheets—Cu Base Both Sides
302	....	....	....	19.75	27.50	77.00
304	25.00	28.00–29.50	....	20.75–24.50	27.50	77.00
309	30.50	35.00	....	....	....	....
310	36.50	41.00	....	....	....	144.00
316	29.50	31.50–34.00	....	26.00	36.50	....
317	34.50	39.00	....	....	....	....
318	33.50	38.00	....	....	....	....
321	26.50	31.00	....	23.00	33.00	111.00
347	27.50	30.50–32.00	....	24.00	33.50	130.00
405	21.25	27.75	....	....	....	....
410	20.75	27.25	....	....	....	....
Nickel	33.25	44.25	41.00	54.00	....	....
Inconel	41.00	53.50	....	....	....	165.00
Monel	34.75	45.75	....	....	....	....
Copper*	....	....	23.70†	29.85‡	....	....

* Deoxidized, † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ¾-in. 18.5
- ⅞-in. and larger 17.5

Longer than 6 in.:
- All diams. 14

Lag bots, all diams.:
- 6 in. and shorter 23
- over 6 in. long 21

Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap, and Sleigh Shoe 21
Tire bolts 12
Boiler & Fitting-Up bolts 31

NUTS

	Reg.	Heavy
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ⅝-in. .	12	6.5
¾-in.-1½-in. ..	9	1
1⅝ in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in.	16.5	6.5
¾-in.-1½-in. ..	12	2
1⅝ in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in..	23	17.5
¾-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller....	35	28.5
⅝-in. & ⅝-in. ...	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
	Light	
⅞-in. & smaller	35	
1⅛-in. to ⅝-in.	28.5	
¾-in. to 1½-in.	26	

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....48 & 10
Plated finishes....31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 42
- ¾-in. through 1 in. ... 34

Longer than 6 in.:
- ⅝-in. & smaller 26
- ¾-in. through 1 in. ... 4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 35
¼-in. diam. & larger.... 16
N.F. thread, all diams... 10

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..List to list-plus-50c.

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95
4,5⅛	40	21.50
3	40	22.61
2½	24,30	23.15
2	24,30	25.36
CARBON		
40	100,110	8.03
35	100,110	8.03
30	84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03
14	60,72	8.57
10,12	60	8.84

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.00	36.50	31.25
303...	43.00	40.00	33.75
304...	43.00	38.50	32.75
309...	55.50	54.50	44.25
316...	56.50	58.50	48.75
321...	49.00	48.00	36.75
347...	53.50	52.00	41.25
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Baltimore, Types 301 through 347 sheet, except 309 E2.

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 308, 416, 501 & 502, S18.

Cleveland, strip A7.

Detroit, strip, except Types 309, 321, 416, 420, 501 and 502 M1.

Dunkirk,N.Y., bars, wire A4.

Duquesne, Pa., bars U5.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip C18.

McKeesport, Pa., bars, sheets except Type 416 U5.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Pittsburgh, sheets C18.

Reading, Pa., bars and strip, except 55.50c for Type 309 strip and 44.75c for Type 309 bars, C4.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 56.00c and bars 44.75c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 61.50c, strip 63.00c, W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip, except Types 303, 309, 316, 416, 501 and 502 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol /....30.00-35.00

Toluol, one deg...26.00-33.00

Industrial xylol ..25.00-33.50
Per ton bulk, ovens

Sulphate of ammonia..$32-$45
Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ..17.25

Do., less than carlots..18.00

Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

METAL POWDERS

(Per pound, f.o.b. shi... point in ton lots for ... 100 mesh, except as ... wise noted.)

Sponge iron
- 98 + % Fe, carlots..
- Swedish, c.i.f. New York, in bags ..7.4

Electrolytic Iron:
- Annealed, 99.5% Fe.
- Unannealed, 99 + % Fe .....
- Unannealed, 99 + % Fe(minus 325 mesh)

Powder Flakes .....

Carbonyl Iron:
- 97.9-99.8%, size 5 to 10 microns..83.00-

Aluminum:
- Carlots, freight allowed .....
- Atomized, 500 lb drums, freight allowed .....

Brass, 10-ton lots 30.00

Copper:
- Electrolytic .....
- Reduced 33.75

Lead .....

Manganese:
- Minus 100-mesh ....
- Minus 35 mesh ....
- Minus 200 mesh ....

Nickel unannealed ....

Nickel-Silver, 10-ton lots .....

Silicon .....

Solder (plus cost of metal) .....

Stainless Steel, 302 ...

Tin .....

Zinc, 10-ton lots..23.00

Tungsten:
- 99%, minus 80 to mesh, freight allowed over 1000 lb. ...
- 1000 lb .....
- Less than 1000 lb ..
- 98.8% minus 65 mesh freight allowed:
  - 1000 lb. and over..
  - less than 1000 lb..

Molybdenum:
- .99% minus 80 to 200 over 500 lb .....
- 200 to 500 lb ...
- less than 200 lb ..

Chromium, electrolytic: 99% Cr min. .....

METALLURGICAL C...

Price per net ton

BEEHIVE OVENS

Connellsvil,fur. .$14.5
Connellsvil,fdry. .17.0
New River, foundry ..
Wise county, foundry.
Wise county, furnace.

OVEN FOUNDRY CO

Kearney, N. J., ovens.
Everett, Mass., ovens
New England, del...
Chicago, ovens .....
Chicago, del. .....
Detroit, del. .....
Terre Haute, ovens..
Milwaukee, ovens ...
Indianapolis, ovens .
Chicago, del. .....
Cincinnati, del. ....
Detroit, del. .....
Ironton, O., ovens ..
Cincinnati, del. ....
Painesville, O., ovens.
Buffao, del. .....
Cleveland, del. .....
Erie, Pa., ovens ....
Birmingham, ovens .
Birmingham, del. ..
Philadelphia, ovens ..
NevilleIsland,Pa.,ovens
Swedeland, Pa., ovens
St. Louis, ovens .....
St. Louis, del. ....
Portsmouth, O., ovens
Cincinnati, del. ...
Detroit, ovens .....
Detroit, del. .....
Buffalo, del. .....
Flint, del. .....
Pontiac, del. .....
Saginaw, del. .....

Includes repr... tive switching charg... *, $1.00; †, $1.45, on... charge being $1.20, ... tracks $1.40, and th... more tracks $1.50. ... within $4.15 freight ... from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
ork (city)	6.27	7.29	8.44	6.59	...	6.42	7.29	9.25	6.40	6.58	8.04
ork(c'try)	5.97	6.99	8.14	6.29	...	6.12	6.99	8.95	6.10	6.28	7.74
(city) ..	6.40	7.20	8.49	6.35	...	6.25	7.04	9.25	6.40	6.98	7.88
(c'try) .	6.20	7.00	8.29	6.15	...	6.05	6.84	9.05	6.20	6.78	7.68
(city) ..	7.15	7.05	8.25	6.35	...	6.30	7.11	8.90	6.15	6.30	7.40
(c'try) ..	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
(city) ...	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
c'try) ...	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
k, Va. ..	6.50	...	...	6.70	...	6.55	7.70	...	6.60	6.50	8.00
ond, Va. .	5.90	...	8.10	6.10	...	6.10	6.90	...	6.30	6.05	7.80
(w'hse) .	6.02	7.26	8.49	6.46	...	6.46	7.26	...	6.56	6.22	7.86
) (del.) ..	5.80	6.60	8.29	6.06	...	5.80	6.65	10.65††[5]	6.00	6.25	7.55
(w'hse).	5.60	6.40	8.09	5.86	...	5.60	6.45	10.45††[5]	5.80	6.05	7.35
(w'hse) ..	5.60	6.40*	7.75	5.65-5.95	6.90	5.55	6.40	10.10††	5.70	5.75	7.00
: (w'hse).	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.09	6.19-6.35	7.28
und (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
(w'hse) .	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
(city) ..	6.02	6.59	7.34	5.95	...	5.95	6.51	...	6.24	6.34	7.50
o (city) .	5.80	6.60	7.95	5.75	...	5.75	6.50	10.30	5.90	6.00	7.20
o (w'hse)	5.60	6.40	7.75	5.55	...	5.55	6.30	10.10	5.70	5.80	7.00
kee (city)	5.94	6.74	8.09	5.89	...	5.89	6.74	10.44	6.04	6.14	7.34	
. (c'try).	5.74	6.54	7.89	5.69	...	5.69	6.54	10.24	5.84	5.94	7.14
is (del.).	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[5]	5.78	5.93	7.13
(w'hse) .	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[5]	5.58	5.73	6.93
City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
ty(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
, Nebr. ..	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
m (city) .	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.25
m (w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
ng. (city)	6.55	8.10	9.05[2]	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
(w'hse) ..	6.35	7.90	8.85[2]	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
rancisco..	6.65	7.80[4]	8.90[3]	6.60	...	6.45	8.20	...	6.45	6.50	8.60
-Tacoma .	7.05	8.60[3]	9.20[3]	7.30	...	6.75	9.10	11.15	6.65	6.75	8.80

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage excluded; ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb er; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]—3500 lb and over; [5]—1000 to 1999 lb.

REFRACTORIES

Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Duty: St. Louis, Vandalia, Farber, Mo., Olive Hill, Hayward, Ashland, learfield, Curwensville, Pa., Ottawa, Ill.,). Hard-fired, St. Louis, Vandalia, Mo., hill, Ky., $156.20.

eat Duty: Salina, Pa. $99.60 Wood- N. J., St. Louis, Farber, Vandalia, , Mo., West Decatur, Orviston, Clear- Beach Creek, Curwensville, Lumber, laven, Pa., Olive Hill, Hitchins, Halde- Ashland, Ky., Troup, Athens, Tex., s Pottery, Ga., Bessemer, Ala., Ports- Oak Hill, O., Ottawa, Ill., $94.60.

ediate-Heat Duty: St. Louis, Farber, lia, Mo., West Decatur, Orviston, Beach Curwensville, Lumber, Lockhaven, St. , Clearfield, Pa., Olive Hill, Hitchins, nan, Ashland, Hayward, Ky., Athens, Tex., Stevens Pottery, Ga., Ports- , O., Ottawa, Ill., $88; Bessemer, Ala.,

eat Duty: Oak Hill, or Portsmouth, O., eld, Orviston, Pa., $79.20; Parral, O., ; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

ress: Chester, New Cumberland, W. Va., rt, Merill Station, Clearfield, Pa., Iron- Wellsville, O. $66.

Out: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

uis, Vandalia, Farber, Mo., Olive Hill, 105.60; Beach Creek, Pa., $94.60; Otta- ., $90.

SILICA BRICK

nion, Claysburg, or Sproul, Pa., Ports- O., Ensley, Ala., $94.60; Hays, Pa., 00; Joliet, Rockdale, Ill., E. Chicago, $104.50; Lehi, Utah, Los Angeles,).

n Silica Coke Oven Shapes (net ton): urg, Mt. Union, Sproul, Pa., Birming- $92.40.

Silica Coke Oven Shapes (net ton): or Rockdale, Ill., E. Chicago, Ind., Pa., $93.50.

BASIC BRICK

t ton, Baltimore or Chester, Pa. Burned brick, $73-$78; chemical-bonded chrome $77-$82; magnesite brick, $99-$104; al-bonded magnesite, $88-$93.

MAGNESITE

t ton, Chewelah, Wash. Domestic dead- , ⅝" grains; bulk, $36.30; single paper $41.80.

DOLOMITE

et ton. Domestic, burned bulk; Bonne Mo., $12.15; Martin, Millersville, Narlo, Center, Woodville, Gibsonburg, Bettsville, illmeyer, Plymouth Meeting, Blue Bell, ms, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$38-$39
Domestic scheelite, del.	nominal

MANGANESE ORE

Indian manganese, 46-48%, nearby, 92.00-96.00c per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 79.8-81.8c.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

	Indian and African	
48%	2.8:1	$32.50
48%	3:1	35.00-36.00
48%	no ratio	36.00
	South African Transvaal	
44%	no ratio	$24.00-25.00
45%	no ratio	20.00
48%	no ratio	$31.00-32.00
50%	no ratio	28.00-28.50
	Brazilian	
44%	2.5:1 lump	$32.00
	Rhodesian	
45%	no ratio	$20.00-21.00
48%	no ratio	26.00
48%	3:1 lump	35.00-36.00
	Domestic—rail nearest seller	
48%	3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $75, Palmerton, Pa.; $75, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l, packed, $197; gross ton lots, packed, $212; less gross ton lots, packed, $229; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $187, Johnstown, Pa.; $185, Sheridan, Pa.; $188, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.ob. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227; less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.30 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max, 7% Si. **Special Grade:** (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 34c per lb of metal; packed, 34.75c; ton lot 36.25c; less ton lot 38.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump bulk, 1.50% C grade, 18-20% Si 9.90c per lb of alloy, carload packed, 10.65c, ton lot 11.55c, less ton 12.55c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2 from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, cl., lump, bulk 21.75c per lb of contained Cr, c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

"SM" Ferrochrome: (Cr 60-65% Si 4-6%, Mn

(*Please turn to page* 139)

More Bans on Metal Use Coming

Consumers exert increased pressure on suppliers whose expansion programs fail to keep pace with growing requirements for defense and essential civilian needs

LAY YOUR groundwork now to get into war production work if a "strategic" metal is used in your present product. You may be forced to curtail your civilian product operations sooner than it was expected a few weeks ago. A substitute material may be found, but its availability probably is becoming tighter as demand mushrooms from many directions.

Users of aluminum were jolted last week by the government's revision to its distribution order requiring producers to channel an overall average of 45 per cent of their base period production to defense work, effective Feb. 1. The previous limitation averaged about 25 per cent. The actual set-aside for DO orders for fabricators ranges from 30 per cent on rolled shapes to 60 per cent for forgings. Fabricators will be forced to revise their shipping schedules as rapidly as possible to comply with the new regulation. That means some aluminum sheets, bars, structurals, etc. promised for delivery as far ahead as April will not reach your plant; the material must be diverted to fill increasing defense needs. Future developments in the defense effort may force a further reduction in tonnages permitted for civilian goods.

End-Use Restrictions—That portion of aluminum production permitted for civilian goods will be restricted as to end use after Apr. 1. National Production Authority issued a list of more than 200 items in which aluminum may not be used. For the most part, they are comparatively unimportant tonnage-wise. There are about a dozen classifications, though, in which the tonnage has been growing steadily. These include: Storm windows; domestic laundry equipment; cleaning accessories; wire fencing; residential type roofing and siding; etc. Producers of those products in many instances had been forewarned of the restrictive action and had cut down where possible the amount of aluminum used in each unit produced; others have been preparing to use substitute materials, or negotiating for DO business.

Restrictions on end-uses became necessary despite an increase of 19 per cent in U. S. aluminum production last year, amounting to 1,437,255,518 pounds. Expansion plans of the industry will provide for an increase of 20 per cent this year and for an additional increase in 1952. Some 930 million pounds will be added to the industry's annual capacity by the end of 1952. But most of the metal so produced will be earmarked for defense orders or the national stockpile.

Aircraft will require the largest amount of aluminum used in military equipment. Other military applications developed during World War II are again coming to the fore, as well as a number of newer uses, some of which cannot be disclosed at this time, says Donald M. White, secretary, Aluminum Association, New York.

Expect Zinc Cuts by Apr. 1

Zinc die casters face the threat of an enforced sharp curtailment in operations about Apr. 1. Present restrictions on the use of zinc will be tightened by NPA by the date, banning use of the metal for decorative products and nonessential items. If your product is considered "functional" cut in operations will be less severe. The order will follow closely the pattern set up in the aluminum regulation.

Government officials are believed to be awaiting a wider acceptance by producers and consumers of the necessity for stricter restrictions before issuing the order. Several responsibe members of the zinc industry are urging a reconvening of their advisory committee to sponsor early action. They point out that zinc stocks held by smelters are at an all-time low, amounting to only about 9000 tons of which about 2000 tons are special high grade.

Lead Supplies Tightening

Look for a further tightening in availability of lead. As shortages in other metals force the metalworking industry to seek substitutes, demand for lead will broaden. Producers are receiving a larger volume of inquiry for March delivery, and the aggregate is far in excess of supply.

Brass Mills Feel Supply Pinch

Consumers of copper and brass products are having difficulty in covering minimum needs. No easing in this situation can be expected in the foreseeable future. Distributors' inventories in New England are sufficient to take care of no more than 40 per cent of present inquiry.

Decorative automotive accessories are in heavy demand with distributors of these items building up stocks against restrictions on supplies for manufacturing after Apr. 1. Only a few producers of accessories have defense contracts. The number of products has been reduced drastically in some instances to make inventories of material for fabrication stretch as far as possible.

Confusion over government regulations is slowing domestic output and importation of copper. Nonferrous scrap volume is off and secondary refiners of electrolytic copper are losing production.

Costume jewelry shops are operating at a high rate by use of an extra shift, building inventories against a cutoff of nonferrous metal supplies. Confronted with reductions in brass and other materials the jewelry industry is considering use of hi cost substitutes.

In leading copper and brass suming areas in Connecticut, t is a lag in placement of defense ders. This, coupled with restrict on the use of metal for many essential goods, threatens to op gap in production schedules with offs and shorter hours. Eventu large armament orders for co and brass products will be forth ing. Contrary to experience at start of the last war, deficit in n supplies confronts the industry. A tional facilities cannot be constru to eliminate these deficits quickl

Tin Market Remains Unsettle

Volume of tin sold by importe off sharply. Lack of uniformit sales policies add to the confu Reconstruction Finance Corp.'s p sales policy differs from that of porters. Even among the la prices vary, depending upon dates appear on actual sales or Importers hesitate to place o abroad in the usual volume, l uncertain as to what price they legally charge on new tin arriva

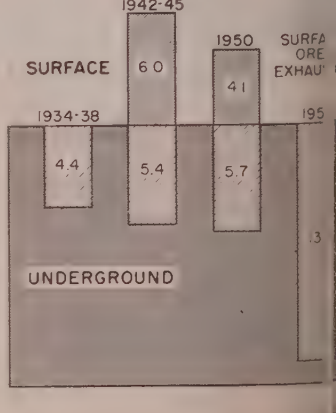
Nickel Output at Peacetime H

Production of nickel in Cana at maximum capacity and is exp to be larger in 1951 than in peacetime year. Additional su of the metal will be available the United States government-o nickel properties in Cuba whic being reactivated. Defense needs absorb these additional tonnage dicating you will witness a cont tion of, if not a broadening in, ent restrictions on end uses.

International Nickel Co. of Ca Ltd., Copper Cliff, Ont., reports military requirements of Canada ted States and United Kingdon being met and deliveries are made to government stockpiles. Frood-Stobie open-pit ores, whic abled the company to achiev high output during the war and war years, will be mined out Full conversion to underground ing in 1953 is expected.

Inco Digs Deeper for Rec Tonnage

(Average yearly output, millio tons)



NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c. Conn. Valley; Lake 24.61½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.00c; 80-10-10 (No. 215) 43.25c; 80-10-10 (No. 305) 35c; No. 1 yellow (No. 405) 25.00c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but within excess of rate applicable on 30,000 lb carload orders.

Secondary Aluminum: Piston alloys 30.00-30.50c; No. 12 foundry alloy (No. 2 grade) 29.50-30.25c; steel deoxidizing grades, notch bar, granulated or shot: Grade 1, 32.00c; grade 2, 30.00-30.25c; grade 3, 29.00-29.50c; grade 4, 28.50-29.00c. Prices include freight allowed, rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Rowport, Tex.

Antimony: Grade A, prompt, 182.50c; Feb. 182.00c; spot 181.50c.

Antimony: American 99-99.8% and over "but not meeting specifications below 42.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 42.50; f.o.b. Laredo, Tex., in bulk shipments. Foreign, 99%, nominal.

Nickel: Electrolytic cathodes, 99.9%, base sizes refinery, unpacked, 50.50c; 25-lb pigs, 53c; "XX" nickel shot, 54.15c; "F" nickel shot or ingots, for addition to cast iron, 53c. Prices include import duty.

Mercury: Open market, spot, large lots, New York, $225 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb alloy, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, 2.85 del.; special or patented shapes $2.80.

Cobalt: 97.99%, $2.10 per lb for 500 lb (kegs); $2.15 per lb for 100 lb (case); $2.17 per lb per 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 90.16c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Rhodium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.93-41.68; yellow brass 36.86-37.86; commercial bronze, 95%, 39.91-41.61; 90%, 39.48-41.13; red brass, 85%, 38.54-40.14; 80%, 38.12-39.67; best quality, 39.15; nickel silver, 18%, 50.57-51.91; phosphor-bronze 5% A, 5%, 58.49-60.20.

Wire: Copper, hot-rolled 35.78-37.53; cold-drawn 37.03-38.78; yellow brass free cutting, 31.50-32.63; commercial bronze, 95%, 39.60-41.30; 90%, 39.17-40.82; red brass 85%, 38.23-39.90; 80%, 37.81-39.36.

Seamless Tubing: Copper 39.97-41.72; yellow brass 39.87-41.29; commercial bronze, 90%, 42.43-43.79; red brass, 85%, 41.45-43.05; 80%, 41.01-42.36.

Rod: Yellow brass 37.15-38.57; commercial bronze, 95%, 40.20; 90%, 39.77-41.42; red brass, 85%, 38.83-40.43; 80%, 38.41-39.96; best quality brass, 39.44.

Fine Wire: Bare, soft, f.o.b. eastern mills, 28.67-29.42, l.c.l. 29.17-29.92, 100,000 lb 28.545-29.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10, 100,000 lb lots magnet, del., 15,000 lb or more 34.50, 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	52.0	....	....
0.156-0.188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq. ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 24.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.50c; over 12-in., 23.50-24.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 71.50c. Strip, cold-rolled, 77.50c. Rods and shapes, 67.50c. Plates, 69.50c. Seamless tubes, 100.50c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 57.00c. Strip cold-rolled 60.00c. Rods and shapes, 55.00c. Plates, 56.00c. Seamless tubes, 90.00c. Shot and blocks, 50.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill pate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 37.69c; oval 37.19c; cast 37.375c.

Copper Cyanide: 70-71% Cu. 100-lb drums, 1000 lb 60.8c, under 1000 lb 62.8c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,900 lb, 18.0¢c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 29.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 68.50c; 10,000 to 30,000 lb, 69.50c; 3000 to 10,000 lb, 70.50c, 500 to 3000 lb 71.50c; 100 to 500 lb, 73.50c; under 100 lb, 76.50c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 35.00c; 400-lb bbl. 33.00c up to 10,000 lb, 32.50c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chrolide (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 20,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Muntz metal	19.00	18.75	18.25
Nickel, silver, 10%	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; composition red brass 22.00-22.50; radiators 17.50-17.75; heavy yellow brass 17.75.

* Nominal.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 19.50.

* Nominal.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 20.00; No. 2 18.50; light copper 17.25; No. 1 composition red brass 17.00-17.50; No. 1 composition turnings 16.50-17.00; mixed brass turnings 12.00-12.50; new brass clippings 17.50-18.00; No. 1 brass rod turnings 16.00-16.50; light brass 11.00; clean heavy yellow brass 14.50-15.00; new brass rod ends 16.50-17.00; auto radiators 14.50-15.00; cocks and faucets, 15.50-16.00; brass pipe 17.00-17.50.

Lead: Heavy 14.50-14.75; battery plates 8.75-9.00; linotype and stereotype 14.50-14.75; electrotype 12.75-13.00; mixed babbitt 12.25-12.50.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 63.00-65.00; block tin pipe 90.00; No. 1 babbitt 58.00-60.00.

Aluminum: Clippings 2S 19.00-19.50; old sheets 15.50-16.00; crankcase 15.50-16.00; borings and turnings 12.00-12.50.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
1-8	24.50	16.80	17.50	182.50	19.00	42.00	50.50	90.16
Avg.	24.50	16.80	17.50	171.798	19.00	42.00	50.50	90.16
29-31	24.50	16.80	17.50	183.00	19.00	42.00	50.50	90.16
26-27	24.50	16.80	17.50	182.00	19.00	42.00	50.50	90.16
25	24.50	16.80	17.50	183.00	19.00	42.00	50.50	90.16
24	24.50	16.80	17.50	180.00	19.00	42.00	50.50	90.16
23	24.50	16.80	17.50	178.00	19.00	42.00	50.50	90.16
22	24.50	16.80	17.50	176.00	19.00	42.00	50.50	90.16
19-20	24.50	16.80	17.50	175.50	19.00	32.00	50.50	90.16
18	24.50	16.80	17.50	175.75	19.00	32.00	50.50	90.16
17	24.50	16.80	17.50	176.00	19.00	32.00	50.50	90.16
16	24.50	16.80	17.50	175.00	19.00	32.00	50.50	90.16
15	24.50	16.80	17.50	172.00	19.00	32.00	50.50	90.16

NOTE: Copper; Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits ,del. New York; Aluminum primary ingots, 99%, del.; Antimony, Laredo, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes for refinery, open market, New York. Prices, cents per pound; except silver, cents per ounce.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, effective Feb. 7, 1951.

STEELMAKING SCRAP COMPOSITE

Feb. 8	$44.00
Feb. 1	48.00
Jan. 1951	46.33
Feb. 1950	27.52
Feb. 1946	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

No. 1 Heavy Melting Steel (Grade 1)

Basing Point	Dealer, Industrial	Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	40.00	42.00
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Point, Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 heavy melting steel) for other grades of steel scrap.

Open-hearth and Blast Furnace Grades

2. No. 2 Heavy Melting	—$2.00
3. No. 1 Busheling	Base
4. No. 1 Bundles	Base
5. No. 2 Bundles	— 3.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings & Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Electric Furnace and Foundry Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate Scrap	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate Scrap:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
20. Foundry Steel, 2 feet and under	+ 2.00
21. Foundry Steel, 1 foot and under	+ 4.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00

Special Grades

25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00

Restrictions on Use

(1) Prices for Grades 11, 23 and 24 may be charged only when shipped to a consumer directly from an industrial producer of such grades; otherwise ceiling prices shall not exceed prices established for the corresponding grades of basic open-hearth and blast furnace scrap.
(2) Prices established for Grades 26 and 27 may be charged only when such grades are sold for use for chemical or annealing purposes; otherwise ceiling prices for such grades shall not exceed the price established for Grade 10.
(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price for such grade shall not exceed the ceiling price established for the corresponding grade of basic open-hearth.

Special Pricing Provisions

(1) Sellers of Grades 26 and 27 may make an extra charge of $1.50 per ton for loading in box cars, or 75 cents per ton for covering gondola cars with a weather-resistant covering.
(2) Ceiling price of pit scrap, ladle scrap, salamander scrap, skulls, skimmings or scrap recovered from slag dumps and prepared to charging box size, shall be computed by deducting from the price of No. 1 heavy melting steel of dealer and industrial origin, the following amounts: Where iron content is 85% and over, $4; 75% and over, $6; less than 75%, $10.
(3) Ceiling price of any inferior grade of scrap not listed shall not exceed the price of No. 1 heavy melting steel less $15.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap.

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheels	Base
4. Hollow Bored Axles	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel	— 6.00
9. Uncut Frogs, switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
22. Uncut Bolsters & Side Frames	Base
23. Cut Bolsters & Side Frames	+ 3.00
24. Angle & Splice Bars	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00

Restrictions on Use

(1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses; otherwise, ceiling price for such grade shall not exceed ceiling price established for Grade 14.
(2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling price for such grade shall not exceed ceiling price established for No. 1 heavy melting steel.

CAST IRON SCRAP

Ceiling price per gross ton for any of the following grades of cast iron scrap shall be the price shown in the following table, f.o.b. shipping point.

1. Cast Iron, No. 1 (Cupola Cast)	$49.00
2. Cast Iron, No. 2 (Charging Box Cast)	47.00
3. Cast Iron, No. 3 (Heavy Breakable Cast)	45.00
4. Cast Iron, No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery Cast	52.00

Restrictions on Use

(1) Ceiling shipping point or on-line price which a basic open-hearth consumer may pay for No. 1 cast iron, No. 1 wheels, clean auto cast or malleable shall be the ceiling price established for No. 3 cast iron.
(2) Ceiling shipping point or on-line price which any foundry consumer other than a malleable iron producer may pay for Grade 10 shall be the ceiling price established for No. 1 cast iron.

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin which is allocated by the National Production Authority to a consumer, shall be as follows:
(1) For preparing into Grade No. 1, Grade No. 2 or Grade No. 3, $8.
(2) For hydraulically compressing Grade No. 4, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3.
(4) For preparing into Grade No. 25, $6.
(5) For preparing into Grade No. 19, $6.
(6) For preparing into Grade No. 12, Grade No. 13, Grade No. 14, or Grade No. 18, $10.
(7) For preparing into Grade No. 17 or Grade No. 21, $10.
(8) For preparing into Grade No. 16 or Grade No. 20, $10.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be as follows:
(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.
(3) For preparing into Grade No. 16, $4.
(4) For preparing into Grade No. 17, $5.
(5) For preparing into Grade No. 18, $7.
(6) For preparing into Grade No. 21, $4.
(7) For preparing into Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron shall be limited to the following:
(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 1, $4.

Whenever scrap has arrived at its point of delivery and the consumer engages a dealer to prepare such scrap, no fee may be charged for such services unless the consumer obtains prior written approval from OPS.

No preparation charge other than the charges set forth above may be made for the preparation of any grade of iron or steel scrap unless the consumer has secured prior written approval of such charges from OPS.

Commissions

No comissions shall be payable on sales made under this regulation except by a consumer to a broker for brokerage services rendered to the consumer. Where scrap is allocated by NPA other than from a government agency, the seller may designate a broker. Where scrap is located by NPA from a governmental agency, the consumer may designate a broker. In the case that a broker purchases iron or steel scrap for sale to a consumer such consumer may pay such broker a commission not exceeding $1 per gross ton. The regulation specifies under what conditions the broker commission may be paid.

Unprepared Scrap

The term "unprepared scrap" does not include such demolition products as bridges, box cars or automobiles which must be so priced that the prepared scrap will be delivered to the consumer within the established ceiling delivered prices.

For unprepared steel scrap other than materials suitable for hydraulic compression, the ceiling basing point prices shall be $8 per gross ton beneath the established ceiling price of the prepared base grade, No. 1 heavy melting or No. 1 railroad heavy melting steel.

For unprepared material which when compressed constitutes No. 1 bundles the ceiling basing point price shall be $6 per gross ton beneath the ceiling basing point price for No. 1 bundles; or when compressed constitutes No. 2 bundles the ceiling basing point price shall be $8 per ton beneath the ceiling basing point price for No. 2 bundles.

Any iron casting which cannot be broken with an ordinary drop for Grade No. 2 or Grade No. 1 shall not be classified as Grade No. 2. Where such iron casting requires blasting or other special preparation is sold to a consumer of scrap, the shipping point price for Grade No. 1 must be reduced by the amount of the additional charges required for such preparation.

Premiums for Alloy Content

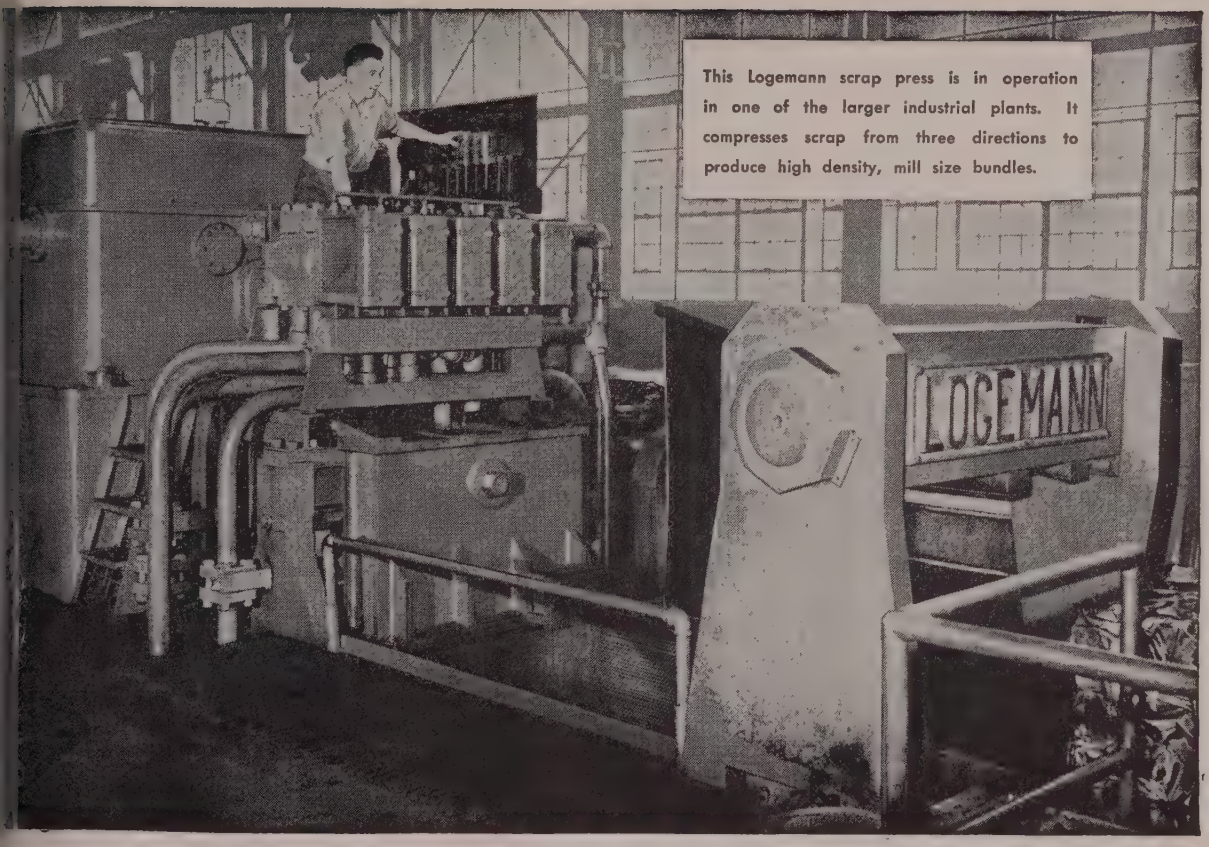
No premium, except those listed below, may be charged for alloys contained in iron and steel scrap, except as outlined below the prices are not confined to a particular

Nickel—A premium of $1.25 per gross ton for each 0.25 per cent may be charged in addition to the applicable ceiling price for No. 1 heavy melting steel where the scrap contains not less than 1 per cent but not over 5.25 per cent nickel.

Molybdenum—A premium of $2 per ton may be charged in addition to the applicable ceiling price for No. 1 heavy melting steel for scrap containing not less than 0.15 per cent molybdenum. A premium of $3 per ton may be charged in addition to the applicable ceiling price for No. 1 heavy melting steel or scrap containing not less than 0.5 per cent molybdenum.

Manganese—A premium of $5 per ton over the applicable basing price for No. 1 heavy melting steel or No. 1 railroad heavy melting steel may be charged where scrap contains not less than 1 per cent manganese and is in pieces larger than 12 in. x 24 in. x 8 in. A premium of $14 per ton over the applicable basing point price for No. 1 heavy melting steel or No. 1 railroad heavy melting steel may be charged where scrap contains not less than 10 per cent manganese and is cut in sizes of 12 in. x 24 in. x 8 in. or smaller. These manganese premiums are only applicable when the scrap is sold for electric furnace use, except on allocation by NPA.

Chromium—Steel scrap conforming to SAE 52100 may command a premium of $1 per ton in addition to the applicable ceiling price for the corresponding grade when sold for electric furnace use only, but in no event shall the ceiling price including the premium provided exceed the ceiling price for No. 1 heavy melting steel plus $1.



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Sheets, Strip . . .

Sheet and Strip Prices, Page 119 & 120

Cleveland—Shipping difficulties attending the "sick" switchmen's strike are playing hob with sheet mill order scheduling. Republic Steel Corp. continues to operate its large continuous mill here despite the shutdown of open hearths and blast furnaces. Rollings are restricted to availability of semifinished stocks and when these are gone the mill will have to go down. Rail shipments out of the mill are completely shut off and the company is dependent for moving tonnage to consumers on availability of trucks. Sheet mills of the company in Warren, O., and Gadsden, Ala., are unaffected by the rail strike so far.

Sheetmakers have opened books for April on general customer tonnage and are accepting business into third quarter on DO account. April quotas for the general trade have been cut somewhat from those prevailing in March and the lost production now being experienced may cause still further quota cutbacks and substantial carryover tonnage from April to May.

Pittsburgh—There is little in the sheet and strip market situation to encourage commercial consumers' hopes for improvement in supply conditions over coming months. All the signs point to increased diversion of tonnage to defense and other emergency consuming channels as the weeks pass, and this, of course, will be at expense of regular customers. Most of the mills currently are booked into third quarter on hot-rolled and well through second quarter on cold-rolled for DO account. The "sick" switchmen's strike is hampering shipments into and out of the district with car shortage becoming increasingly acute. Production, however, is being maintained at high level, easing in weather conditions resulting in restoration of full gas flow to industrial plants.

Boston—Allocations for April outside of rated and directive tonnage for defense average 10 per cent under March. This holds for hot-rolled strip under nonintegrated producer quotas. Although DO volume to converters in numerous cases more than balances the loss in civilian tonnage, shortages in sheets and other flat-rolled items are becoming more acute with consumers of so-called tailor-made steel.

New York—Various restrictions on alloys, nickel, chrome and molybdenum in particular, are confusing producers of alloy sheets. Some claim they do not know what they can promise in the way of deliveries on stainless and other grades until the situation becomes clarified. Stainless producers indicate, however, they have little tonnage available for DO-rated orders in second quarter. Certain mills appear definitely into third quarter on such business.

Cincinnati — District sheet mills continue production close to capacity despite transportation difficulties. Stocks of acid are especially low. Outgoing shipments also are a problem, with choke point in storage near. Schedules are complete through March, that month showing the expected trend of progressively more tonnage for military and allied needs.

Birmingham — Several prospective new users of sheets here are awaiting word, that may not come, on availability. Their entry into the district is part of the current campaign for new industry, but DO orders and the hue and cry from established consumers, plus the ancient shortage, are contributing to the uncertainty.

Steel Bars . . .

Bar Prices, Page 119

Pittsburgh—Carbon bar sellers anticipate steady increase in defense requirements as mobilization picks up speed. While DO and other emergency tonnage still represent the smaller proportion of total volume entertained by the mills, such business is rising with corresponding tightening in supplies for the regular trade. Nonintegrated cold-finished bar makers are having difficulty getting all the hot bars they need, but they are continuing to operate at high levels for the reason they are assured steady flow of hot bars under allocation based on tonnage receipts in first nine months of 1950. Demand for alloy bars is increasing, most producers being booked through second quarter.

Boston—Despite an increase in defense order acceptance limitations, rated bar order schedules are one to two months beyond regular allocations for commercial use, the latter being April for hot-rolled carbon and alloy bars compared with May for DO bookings. Rated cold-drawn orders are booked well through June. Heavier volume of rated orders is lowering schedules for civilian tonnage. While forge shops are supplying a high percentage of priority volume, an increase in other directions is steady with negotiated contracts for shell quality cutting into hot-rolled openings.

New York—This week should see distribution of non-rated steel for April, and on a further restricted basis. Existing programmed allocations have been made for that month already, and DO-rated tonnage for not only that month but well beyond. Some mills are about booked up for the entire second quarter on military orders for hot carbon bars and into the third quarter on cold drawn carbon bars and alloy materials.

Philadelphia—Bar demand is expected to be accelerated sharply soon by a large shell program. Steel orders against this program may be on a DO-rated priority basis although requirements may be handled under directive allocations.

Cleveland — Further tightening in merchant bar supplies is indicated. Transportation and operating difficulties attending the cold weather at various points are intensifying tight supply conditions. Producers are booked well through second quarter on DO accounts but are just beginning to arrange schedules for April on regular commercial business. Bulk of tonnage by far still is going into commercial channels but the volume of defense and related requirements is steadily rising as more and more manufacturers get into the emergency production program.

Plates . . .

Plate Prices, Page 119

New York—Plate producers soon set up schedules on non-ra orders for April, very likely o more restricted scale than for Ma Producers have set up allocati against existing emergency progra already as differentiated from DO-rated business, and are well i May and in a few instances i June on the latter. Some action probably be announced soon with gard to allocation programs for locomotive, oil country goods ship building industries. Product is at high pitch with increas amount of strip plate capacity pected to be made available soo

Philadelphia—Although plate p ducers are not booked as far ah on DO-rated orders as sellers of s other steel products they are hav to set aside a heavy amount of t nage for emergency work. Exist allocated programs require subst tially more plates than any ot product and certain new progr will also. The 25 cargo ships placed by the maritime administra will require approximately 112 tons of hull steel of which 60 per c will be plates. The 25 ships w divided equally among five yards a total cost of $200,000,000, t leaving $150,000,000 for additio ships on which action may c later.

Boston—Rated and directive nage accounts for close to 60 cent of production with some p mills, leaving shrinking balance civilian allocations. April allocati after earmarked volume, are f 10 to 15 per cent under March, further reductions are indicated May.

Pittsburgh—Increased defense other emergency tonnage demand plates is indicated in the offing. S eral additional allocation progr are reportedly in the works w will substantially increase the on the plate mills, already carry a heavy tonnage on national er gency account. Proposed new grams include tonnage for loco tives, barges, pipelines, tank cars ships, and are in addition to tonn already earmarked, such as freight cars. There is some un tainty as to just how Washin will allocate these programs, bu is believed distribution in all p ability will be on a month-to-mo basis pending imposition of a C trolled Materials Plan. In such ev rolling schedules will be more or fluid into July at least. Clarifica of the outlook is expected about February.

Birmingham — Plate users searching for supplies, as usual. S of them are picking up a few of plates here and there, but the nothing certain about availabi With priorities on plates for an precedented volume of freight construction, continued tightness general confusion are expected last indefinitely.

San Francisco—Plates gene are agreed to be among the "ti est" steel items in this area. Fa cators are scouring warehouses i tempts to bolster their supplies,

w a little or no success. Mills are s l to be distributing a fair share o he quota among plate fabricators, b for most it is not enough, rela- t e to the number of jobs on fabri- c ors' books.

Seattle—Small plate shops, lacking d ense priorities, are making the b t of a difficult situation. Consider- a e tonnage is involved in terminal p provements by the major oil com- p nies in this area.

Tin Plate . . .

Tin Plate Prices, Page 120

Pittsburgh—Further restrictions on [illegible] of tin plate are expected in sec- d quarter, including the ordering o lighter coatings for cans. Recent- NPA issued five orders restricting [illegible] in numerous products, including [illegible]s, closures and collapsible tubes. Significant development of the past week was announcement by Weirton Steel Co., Weirton, W. Va., it had perfected a new electro-tinplating process that will result in pig tin savings of from 25 to 50 per cent. Tin plate by this new method is coated on one side with the amount of tin required to protect the contents of a can, but the other side is coated with only the amount of tin needed to protect cans from exposure. Under old practice the same weight of coating is applied to both sides of the plate. Thomas E. Millsop, president of Weirton, states the company is offering the new tin plate to customers. No special pricing of the product is involved.

Tubular Goods . . .

Tubular Goods Prices, Page 122

Boston—Directly rated orders for piping are heavier than for steel pipe with both increasing. Merchant pipe allocations for April delivery to distributors are lower, the tonnage in most instances being well below that supplied under former voluntary quotas. After defense, essential program and warehouse orders are entered, pipe tonnage remaining for distribution is limited. One large producer blanked out March and some mills are one to two months behind on shipments. Utilities are feeling out prospects for better than 5000 tons for lead-in requirements in connection with natural gas line installations. Power plant piping is expected to be given a DO rating shortly.

Pittsburgh—Serious loss of pipe tonnage is being experienced as result of the switchmen's strike. Closing down of National Tube Co.'s Lorain Works by the walkout of the railroad men is costing 6000 tons of steel daily, equivalent to 23 miles of 20-in. pipe, or enough to drill 100 oil wells. The McKeesport works of the company was not affected by the walkout but the growing shortage of cars throughout the general area presents a serious threat to maintenance of production schedules.

Cleveland — Between the switchmen's strike and severe weather conditions producers of pipe in this area are having a difficult time maintaining production. National Tube Co.'s big plant at Lorain is down because of the tieup in transportation. Some 6000 tons of steel production are being lost at this plant daily, sufficient tonnage to produce 23 miles of 20-in. pipe. At the same time Republic Steel Corp. operations in the Youngstown area are hampered by the cutting off of industrial gas supplies due to the return of cold weather. The lost production will intensify already tight supply conditions in the pipe market, further delaying shipments to consumers in critical need of supplies, such as the petroleum industry.

Seattle—Cast iron pipe is in improved demand, but agencies of eastern and southern plants are handicapped by slow delivery. Consequently, all bid calls include alternatives and competing types of pipe have been awarded in increasing tonnages.

Structural Shapes . . .

Structural Shape Prices, Page 119

New York—Word that Charles E. Wilson, defense mobilization director, has notified Governor Dewey little or no structural steel will be available for public works except schools and hospitals after midyear has cast a pall on the outlook for large bridge and road-building construction, notably the state Thruway program.

Boston—Fabricated structural steel prices, based on the same margin of profit prevailing before the freeze, are somewhat more stabilized, depending on type of work, tonnage, engineering and plain material costs. As a result, quotations vary widely among shops, higher levels being indicative of premiums paid for plain material. New inquiry is lower with a substantial forward volume being estimated. Completion of the Central Arterial highway, Boston, requiring 50,000 tons, has been advanced from 2½ years to 18 months with priority.

Philadelphia — Structural awards are scattered, and while there is a fair volume of new demand, most inquiries are small. Extended delivery promises of fabricators and uncertainty as to the scope of government limitations on steel for construction purposes as time goes on are having a retarding effect on demand. However, there is considerable industrial work in prospect.

Pittsburgh—Structural shape producers report booking on DO account and emergency delegations extend well into June. Fabricators are pressing for tonnage but are not having much success in getting their needs satisfied. Curb on nonessential building is not expected to materially ease supply conditions since emergency programs, such as new steel mill construction, promise to more than take up any slack in demand that results from cutting off strictly commercial work. Recent awards include 138 tons to the American Bridge Co. for a bridge in Wabasha County, Minn.

Cleveland — Structural fabricators report increasing stringency in structural shape supplies. Curb on certain types of construction has not materially altered the supply situation and licensing of building after Feb. 15 is not expected to affect conditions greatly.

Wire . . .

Wire Prices, Page 121

Boston—Requests for rated tonnage in some ranges are in excess of regular allocations and far heavier than limitation set-aside. In some instances where this wire is known to be urgently needed for armament, acceptance limitation is waived and the order entered. Quotas for civilian uses are narrowing while restrictive orders on tin and zinc are reducing processing of grades involving these metals. Lighter coatings are given some steel in this category. Rod supply is tighter. Spring wire orders are screened and allocations reduced.

Chicago — Wiremakers report demand for bale ties is unseasonably high and a similar situation exists for nails. Part of the pressure originates from fear of critical shortages.

Birmingham—When demand for one wire product eases, another immediately takes up the slack. Result is that wire users, especially those in rural districts, are hard pressed for a reasonable supply. Nails and fencing are acute, and manufacturers' wire is somewhat less stringent, but far from plentiful.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 119

Chicago—Restriction on commercial construction until Feb. 15, after which NPA licenses will be required, appears to have shelved many small jobs which have been confronting reinforcing steel suppliers. Industrial construction is expanding at a rate that will more than offset the commercial hold up. Lack of steel is forcing suppliers to entertain inquiries with caution.

Seattle—Bar mills in this area have backlogs to the end of the second quarter. While building restrictions are hampering potential private construction, demand from public works is insistent and many important projects are up for early award, much of it military installations in Alaska. Peak operations are reported and will continue provided scrap supplies are available.

Semifinished Steel . . .

Semifinished Prices, Page 119

Detroit—Wildcat strike idled 1600 men in Great Lakes Steel Corp.'s openhearth department last Tuesday and resulted in the loss of approximately 3300 tons of ingots. Other departments were not affected. Disruption was caused by dissatisfaction over handling of a grievance.

Chicago — Through last midweek steel ingot production lost on account of the railroad switchmen's strike was estimated close to 50,000 tons. Plants hardest hit are United States Steel Co. and Wisconsin Steel Co. The former had banked four blast furnaces at its South Chicago works but subsequently restored two. Several finishing mills at South and Gary are idle. Wisconsin returned to operation two blast furnaces banked at start of the strike. However, all three stacks at the plant are on slow wind.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 122

Pittsburgh—Both beehive and oven coke producers last week were asking: "Will we be permitted to raise prices to compensate for the latest increase in coal?" No one here had the answer. The fact the coal price regulation appears to completely ignore coke leaves producers of the latter in a quandary on pricing policy. Pending clarification coke men say they will have to continue prices established early in January. Demand for oven coke is strong but some slight easing in pressure is noted attributable to inability of foundries to get all the iron they need to expand operations.

Chicago — If the railroad switchmen's strike continues into this week —Feb. 12—a number of foundries will be out of coke and curtailment or shut down will be necessary. The fuel situation is more serious than that of pig iron or scrap. Foundries outside the Chicago switching district have been more fortunate in receiving coke shipments.

Pig Iron . . .

Pig Iron Prices, Page 118

Cleveland—Foundries are operating generally on a 5-day week basis with a sprinkling reported on 6 days. Many shops would like to go to the 6-day week, but problems of pig iron, coke, and alloy supply are presented which make widespread adoption of the longer workweek in the immediate future doubtful. For one thing, the matter of labor's position is a factor, many workers insisting on the short week.

Pig iron supply is tight but is adequate to support foundry operations at current levels. Merchant sellers are doing everything possible to equitably distribute available tonnage and with foundry inventories held to 30 days everyone appears to be getting a steady flow of iron at least on a restricted basis. Foreign iron is helping some shops to overcome the shortage of domestic material. Currently, foundries producing alloy castings are hampered by the shortage of alloys, particularly nickel and molybdenum.

Boston—Although a few consumers with inventories in excess of 30 days are slowing down shipments, most melters are taking all iron available from district furnace and outside points. Melt is gradually increasing and some shops are inquiring as to coverage against heavier defense orders. Demand for silvery iron is steady, but producers are reluctant to add new commitments. Some silvery is being mixed with imported iron. Foreign purchases of basic have been made around $70, f.a.s.

New York—Demand for domestic pig iron exceeds supply. Production at district foundries has not been restricted, however, due to greater use of scrap and ferroalloys and also to some extent to increasing importation of foreign iron. Most foundries are on a 5-day week basis, with order backlogs increasing. Eventually a 6-day week schedule will be necessary at virtually all shops and will go on that basis if raw material, especially pig iron, can be had in adequate supply. At present only a relatively few foundries are on the more extended schedule.

Philadelphia—Shortage of pig iron was further emphasized last week by the scarcity of freight cars, due to the rail strike. Embargoes were being lifted during the latter part of the week but there is considerable accumulated tonnage to be moved.

Pittsburgh—The "sick" switchmen have gummed up the works for pig iron producers in this area. Shortage of cars resulting from the wildcat strike is seriously slowing down shipments into and out of plants. Blast furnace operations were being maintained but shipments out of some plants were off as much as 40 per cent and getting worse. Some furnaces that had been producing iron for the general market temporarily were diverted to production of hot metal and special irons. Coal and other heavy raw materials were coming into plants by water.

Buffalo—Large quantities of merchant pig iron were piled on the ground last week because of the railroad situation. Shippers reported a scarcity of cars was in evidence even before the strike. A number of foundries are pressing for deliveries to maintain production. Sellers, however, are reluctant to use trucks because of inadequate loading facilities.

Cincinnati—Shipments of pig iron into this district have showed to a point where foundries are concerned about ability to hold the melt at recent levels.

Chicago—Inventories of pig iron have been sufficient to keep foundries operating without serious curtailment during the switchmen's strike. However, if the paralysis continues to Feb. 12, many shops will be in trouble. Currently 37 of the district's 42 blast furnaces are operating. Wisconsin Steel Co., which banked two stacks on Jan. 29, has restored them but all three of the plant's furnaces are on slow wind. United States Steel Co. banked four furnaces at its South works but two have resumed.

Birmingham—Merchant iron melters continue to be besieged with inquiries. Since their order books are full, as they have been for months, new bookings are comparatively light. A program to boost pig iron production through furnace modernization programs, new coke ovens and otherwise will not help the situation for some months.

Seattle—No domestic pig iron is being used here. Buyers have considerable foreign iron on order, but deliveries are behind schedule because of scarce steamship space.

Scrap . . .

Scrap Prices, Page 126

Pittsburgh—Government rollback of scrap prices is being taken in stride by the trade here. Ceiling prices are pretty much in line with expectations. While the reductions are relatively sharp, approximately $6.50 per ton on No. 1 heavy melting steel, the ceiling of $44 plus $1 brokers' commission is only $1.50 under the open market price prevailing early in January. Actually the $51.50 price prevailing recently was in rect only about two weeks or so.

In the period between announc ment of the ceilings and the effecti date, Feb. 7, scrap yards work feverishly to get out as much to nage as possible at the higher pric before the deadline. Substantial to nage was moved though freight c shortage attending the switchme strike presented a serious handic Whether the yards have been denuc of material to such point a sev shortage will be experienced pendi replenishment remains to be se Some trade authorities think su plies will be short for some time, pecially since winter weather will a versely affect collections and prep ration.

Uncompleted contracts at the F 7 deadline took the new ceiling pric Surprisingly, few dealers are criti of the government move and as general thing steelmakers appear sa isfied. Several indicate early re- trance to the market as active bu ers. The new ceilings are said be sufficiently high to encourage c lections and should the governm effect an allocation program for sc assuring all consumers of a const flow of material, reported under c sideration, market stability to a hi degree is believed certain to achieved.

Cleveland—Movement of scrap expected to pick up soon. Shipme are hampered now by the switchme strike which forced a shutdown the largest mill here and in Lor and prevented the free movement cars into yards. Chief objection dealers to provisions of the pr regulation centers around cancel tion of old orders. This results in substantial financial loss to so firms. The working margins p vided for the various interests in market are sufficient to sustain pr ent activity.

Philadelphia — Transition to new government price schedule scrap was made with a minimum confusion. The trade in gene knew that a rollback was in the fing and provided for cancellation contracts just prior to the effect date and their renegotiation. So shippers were adversely affected the rail embargo due to the strike. They couldn't get cars move material before the new sch ules went into effect. However, general no great losses were suffe

Differentials on some items, ca in for disfavor by the trade. For stance, differentials on machine sh turnings of $10 under base and mixed borings and short turnings a shoveling turnings of $6 were c sidered out of line. Normally m chine shop turnings and mixed b ings and turnings are on a par with each other and shoveling tu ings are up $2 or $3 a ton over other grades. This may create ha ship in some cases. One pig iron p ducer who normally is a heavy c sumer of shoveling turnings may f that he will be unable to obtain t material under the circumstances extra screening is necessary.

Differentials on railroad special came in for some criticism also, c riers appearing to be particularly satisfied with the $7 differential rerolling material. Some say t

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plan to take the issue to Washingto

Buffalo—Dealers took in stride $9 per ton reduction in scrap pric under government economic contr But the rush of shipments again old orders at the higher prices le the market temporarily with neg gible supplies and limited collectio Approximately 25,000 tons, abo half the total contracted for, w shipped at the higher prices befo controls went into effect Feb. 7.

Little complaining was heard ov the government's action. The cents switching charge fixed for th area was criticized by dealers, hov ever. It is pointed out that the pr vious switching charge ran betwee 52 cents and 60 cents. Ceiling pric on steelmaking items are in line wi expectations but some talk is hea in the trade that prices on ca grades are a bit too high compare with other items and pig iron.

Boston — Number of steel scra orders taken at higher prices we cancelled last week, partly due shipping difficulties. In most cas revised contracts call for delivery rolled back price levels, which, in t case of heavy melting steel are mo than $10 per ton. Buying at the ne levels has perked up, both of steel a cast grades. Markdowns on cast scr are less drastic than on steel item

New York—Aside from the seve shortage of cars due in part to t railroad strike, scrap brokers exper enced no great difficulty shifting ov to the new government price sche ules. There is some criticism as certain differentials, but in the ma brokers believe that a good job h been done. Under the OPS regul tions the ceiling price for No. 1 hea melting steel at all shipping poin in New York city is $36.99 wi stated differentials applying on other grades.

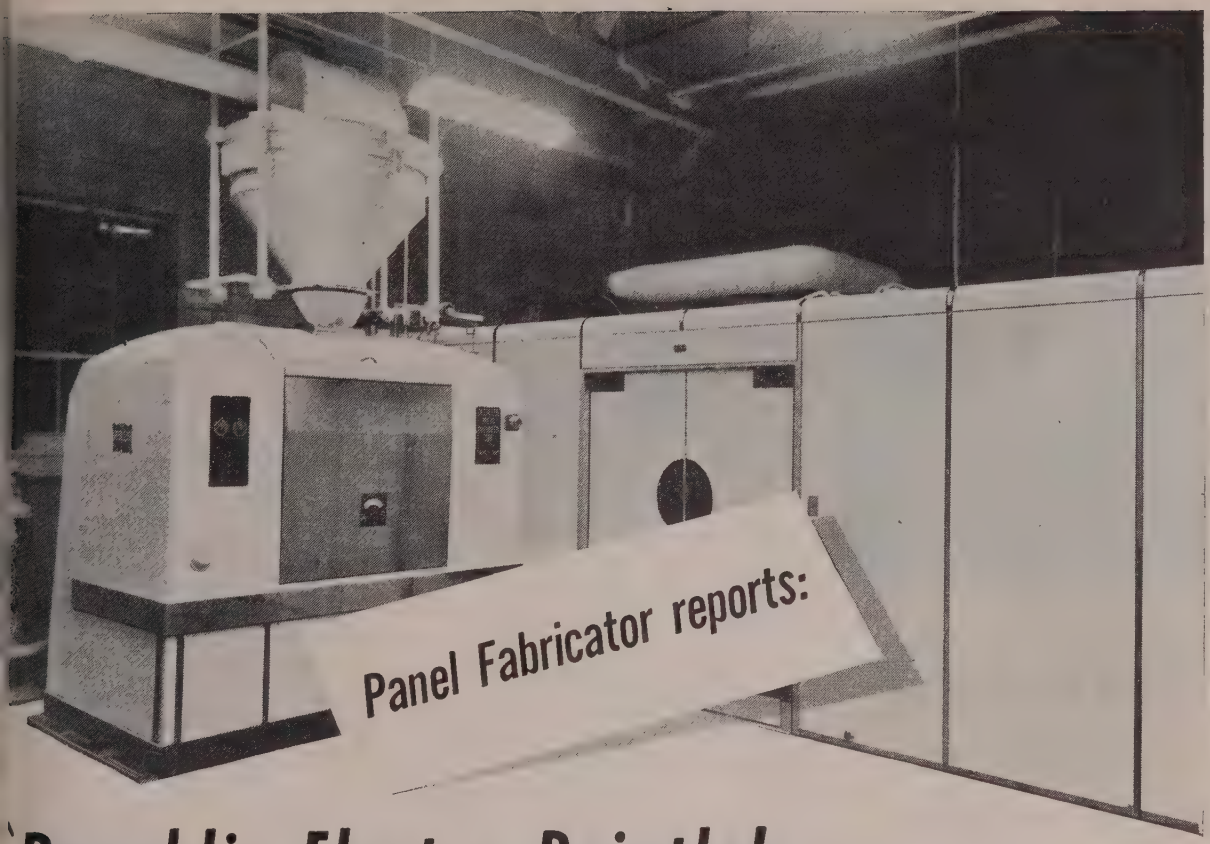
Detroit—The ceiling prices esta lished on scrap appear to satisfy t trade here. Next step will be an location system, the mechanics which now are being set up. P sibly by Mar. 1, an allocation syst will be put in force. In the mea time, some interim arrangeme probably will be worked out volu tarily to take care of hardship ca where a mill cannot obtain sufficie scrap.

Without such an allocation p gram the price ceilings would be u enforceable, the trade feels, sin specialty mills, particularly elect furnace operators, are unable to mand return of the bulk of th scrap on the same basis as t larger mills.

The new $40 delivered price No. 1 grades in Detroit includes a cent switching charge. The f.o price is lower by that amount. other grades are priced in relat to the heavy melting base in exac the same manner as was done un OPA. Brokers' commission is ad to delivered prices. Old orders being filled at the new price leve

Youngstown—The rollback in scr prices is expected to put so Youngstown steel plants back i the scrap market soon. Youngsto Sheet & Tube Co. for one, hasn't be buying for weeks, using inventory stead.

Cincinnati—Dealers rushed to old commitments in iron and st



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scrap before the rollback, but movement of tonnage was hampered by highway conditions and the switchmen's strike. Brokers and dealers set up a schedule of OPS quotations, and continued study of the new regulations.

Chicago—Difficulties of brokers in completing shipments to consumers in the four-day period between announcement of the new ceiling price schedule and the Feb. 7 effective date almost completely eclipsed consumer and broker reactions as to the fairness of the schedule itself.

The railroad switchmen's strike which forced embargoes on scrap shipments made it virtually impossible for any great proportion of old orders to be completed on contract terms. Requests for extension apparently fell on deaf ears. These orders now will have to be renegotiated to comply with the ceiling schedule.

The price rollbacks were not as great as had been expected in the steelmaking grades but mills appear willing to do business at once on the ceiling terms. Foundries and consumers of specialties are pleased that grades they consume are on a more realistic basis than they have been for months. Some days are expected to elapse before normal activity returns to scrap.

St. Louis—Frantic efforts by scrap dealers to get shipments to consumers before price ceilings cancelled old orders marked an otherwise quiet market here last week. Mills were equally anxious, since the rail switchmen's strike has dropped inventories to well under 30 days' supply.

There is some confusion among dealers as to the new regulations, but most of them, recalling the 50-cent commission of OPA days, are satisfied with the $1 margin.

Some St. Louis, Mo., consumers were apprehensive what the new freight differential allowed between melters in the same area would do to their competitive position in relation to consumers on the east bank of the Mississippi river, where scrap from eastern sources enjoys substantially lower freight rates.

Birmingham—Brokers and dealers are studying the 43-page price instruction booklet received from Washington. Trading is virtually at a standstill.

Seattle—Interruption of railroad service last week intensified the critical scrap situation. The largest mill here has only a 10-day inventory and production is threatened.

Warehouse . . .

Warehouse Prices, Page 123

Pittsburgh—Local distributors are entertaining an increasing number of small orders as they seek to distribute available supplies equitably among customers. Handling costs are rising which cannot be passed along to buyers in the form of higher prices under the government price freeze. Considerable shopping around for tonnage is being done, fabricators finding it impossible to satisfy their requirements at usual supply sources because of the highly unbalanced state of most warehouse stocks, both as to products and sizes. As a result, considerable production time is being lost as buyers press the hunt for particular items required t complete jobs. Instances are repor ed where work normally requirin about a week or so to complete ha been held up as much as two month

Boston—Less tonnage is schedule for distributors but this partially offset by an increasing number DO orders covering replacement Shortage of steel with warehouses emphasized by heavy demand whic frequently includes inquiries of mi order size. Flat-rolled, structura and bars are notably limited in su ply.

Philadelphia — District warehouse last month received from 75 to 8 per cent of the tonnage supplied b the mills in the nine-month bas period of last year. However, o some specialties, especially nicke bearing steels, the ratio is lower du to nickel conservation measures.

Cleveland—Delayed mill shipment attributable to the switchmen's strik are cutting further into warehouse i ventories in this area. Distributor outgoing movement has been on slightly interfered with since th bulk of warehouse deliveries is b truck. Pressure on the warehous continues unabated but the unba anced condition of stocks makes impossible to fully satisfy customer requirements. Much shopping arou for tonnage is reported by buyer NPA order M-6, designed to assu the warehouses a steady flow of ste from the mills, is not working out successfully as had been hope Many distributors appear to lean t ward a Controlled Materials Plan distribution as the most likely wa of solving their supply difficulties.

Cincinnati—Demand for steel fro warehouse is apparently mountin although this situation may be a tributed partly to shopping tou Stocks are declining, with hardly a item now in plentiful supply. M replacements are under expectatio

Chicago — Warehouse inventori already low and depleted, have be further disrupted by the switchme strike which has cancelled or delay shipments from mills. Such receip as do get through are dispatched d rect from cars to customers. Insu ficient steel has caused many pla to reduce operations.

Birmingham—Warehouse steel su ply is exceedingly short in most sp cifications. Worst of all, it appare ly is what warehousemen and smal buyers of steel look upon as "froze Demand continues exceptiona heavy.

San Francisco—Lifting of mil set asides for DO's has not improv the distributors' position. Ma warehouses request DO's from cu tomers, but most are not insiste as these rated orders are not t widely distributed. Agricultural i plements and food handling equ ment, for example, lack ratings, y represent essential customers. Mea time, warehouse inventories contin to deteriorate.

Seattle—Warehouse steel stoc are badly depleted. It is difficult distributors to fill defense orders a practically impossible to care f shipyard, municipal and defense pla requirements. Shapes and plates a extremely scarce; sheets are prac cally unobtainable. Distributors a making every effort to supply req

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lar customers, but supplies are inadequate. Demand continues strong for all out-of-stock items.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2200 tons, Wasco county bridge, The Dalles, Oreg., to Judson Pacific Murphy Co., San Francisco; Guy F. Atkinson, Portland, Oreg., general contractor.

2000 tons, plant, Helicopter Corp., Morton, Pa., to Belmont Iron Works, Eddystone, Pa.

1400 tons, Associated Grocers warehouse, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., general contractor.

1400 tons, Willamette river relocation project bridge, to unstated interest; Lee Hoffman, Portland, Oreg., general contractor.

850 tons, Reading Railroad bridge over Schuylkill river, Berks county, Pennsylvania, to American Bridge Co., Pittsburgh.

525 tons, Bullard Havens technical school, Bridgeport, Conn., to Topper & Griggs (Bethlehem Fabricators Inc.) Hartford, Conn.; E. & F. Construction Co., Bridgeport, Conn., general contractor.

505 tons, high school, Valley Stream, N. Y., through Lasker-Goldman Contracting Co., to Schacht Structural Steel Inc., New York.

500 tons or more, two 100-ton gantry cranes for spillway and intake, Albeni Falls dam project, to Star Iron & Steel Co., Tacoma, low $417,930 by U. S. Engineer.

465 tons, building addition, New York Telephone Co., Mt. Vernon, N. Y., to Grand Iron Works Inc., New York.

260 tons, plant, Quaker Rubber Co., Tacony, Pa., to Belmont Iron Works, Eddystone, Pa.

240 tons, absorption towers, Delmont, Pa., to Blaw-Knox Co., Pittsburgh, through Ford, Bacon & Davis, engineers, New York.

155 tons, factory wing, Becton-Dickinson & Co., Rutherford, N. J., through Mahoney-Troast Contracting Co., to Oltmer Iron Works, Jersey City, N. J.

140 tons, Bureau of Roads bridge, Coos Bay, Oreg., to Poole, McGonigle & Dick, Portland, Oreg.; Tom Lillebo, Reedsport, Oreg., general contract.

100 tons, laundry and service building, state hospital, Middletown, Conn., to Topper & Griggs (Bethlehem Fabricators Inc.) Hartford, Conn.; H. Wales Lines Co., Meriden, Conn., general contractor; Fox Steel Co., Hartford, Conn., 80 tons, reinforcing for same project.

STRUCTURAL STEEL PENDING

8500 tons, completion locks, dam, powerhouse, McNary project, Columbia river; U. S. Engineer received bids Feb. 9.

1500 tons, improvements, Pennsylvania station, Pittsburgh; bids asked.

1290 tons, state highway bridge, route 25-A; Newark, N. J.; Ell-Dorer Contracting Co., Newark, low bidder.

830 tons, state bridge, Bronx, New York; William M. Moore Building Corp. and William Lopier Construction Corp., New York, low on construction contract.

700 tons, steel frame warehouse, McNary dam project; A. M. King, Vancouver, Wash., low $181,754, to U. S. Engineer.

300 tons, bridge, Aroostook county, Maine; bids Feb. 19.

240 tons, steel spillway bridge, Canyon Ferry dam; Virginia Bridge Co., Roanoke, Va., low, $59,878 to Bureau of Reclamation, Denver.

100 tons, also 15 tons reinforcing, Washington state highway steel girder bridge, Stevens county; bids to Olympia Feb. 20.

Unstated, proposed four-story addition to 1411 Fourth Ave. Bldg., Seattle; general bids in Feb. 8.

REINFORCING BARS . . .

REINFORCING BARS PLACED

5000 tons, second unit Seattle viaduct, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co. and Rumsey & Co., Seattle, joint contractors.

2200 tons, housing project, Louisville, Ky.; 1200 tons to Jones & Laughlin Steel Co Pittsburgh, and 1000 tons to Laclede S Co., St. Louis.

1200 tons, United States Health Center, C cinnati, to Pollak Steel Co., Cincinnati.

950 tons, LR 765, Allegheny county, Pe sylvania, to United States Steel Supply C Chicago.

800 tons, warehouse building, L. S. Donald Co., Minneapolis, to United States S Supply Co., Chicago.

490 tons, power plant, Illinois Public Serv Co., Hutsonville, Ill., to Bethlehem S Co.; LaCross Dredging Corp., Chicago, g eral contractor.

375 tons, Wasco county Willamette ri bridge, Oregon, to unstated fabricator.

300 tons, apartment building, Peoria, Ill., O. J. Dean Steel Co., Chicago; E. Marhoefer Co., Chicago, contractor.

220 tons, 4-span deck bridge, Housato river, Newtown-Southbury, Conn., to Beth hem Steel Co.; also 910 tons, steel pil to same producer; Mariani Construction C New Haven, Conn., general contractor; Dermott Steel Co., West Haven, Con awarded 7860 square feet, steel grid flo

150 tons, 3-span continuous rolled bea bridge, Darien, Conn., to Truscon Steel C New York; Brunalli Construction Co., Sou ington, Conn., general contractor; Bethleh Steel Co., awarded 70 tons, steel piling.

150 tons, footings for transmission towe Navy communications center, and N. W. L Insurance Co. office building, Seattle, Bethlehem Pacific Coast Steel Corp., Seat

135 tons, addition, Woonsocket hospital, Wo socket, R. I., to Bethlehem Steel Co.; Vo Construction Co., Malden, Mass., gene contractor.

115 tons, 3-span continuous rolled be bridge, Darien, Conn., to Fireproof Pr ucts Co. Inc., New York; Paul Bacca Sons Inc., Stamford, Conn., general c tractor; Bethlehem Steel Co. awarded tons, steel piling, also 250 tons, structu steel.

100 tons, composite steel bridge, Darien, Co to Truscon Steel Co., New York; Brur Construction Co., Southington, Conn., g eral contractor.

100 tons, cold storage plant, Peshastin, Wa and miscellaneous small jobs, to Northw Steel Rolling Mills Inc., Seattle.

Unstated, 1.77-miles, 14-foot diameter tun Columbia Basin project; general contract United Concrete Pipe Corp. and Ralph Bell, Baldwin Park, Cal., joint low 175,315.

REINFORCING BARS PENDING

29,000 tons, completion McNary dam po house and other facilities; bid call out 9 by U. S. Engineer, Walla Walla, Wa opening date not announced.

1000 tons, Wabash Ordnance plant, Newp Ind.; bids asked.

900 tons, Lake Shore Briar apartments, cago; bids in.

600 tons, caisson work, Detroit.

385 tons, main drain, project UI-261 Congress Street superhighway, Chicago; Feb. 8.

250 tons, Harbison-Walker Refractories Clearfield, Pa.

200 tons, spillway dam, Albeni Falls pro bids to U. S. Engineer, Seattle, Mar.

200 tons, Carney school, Ankeny, Iowa; mer & Stiles Construction Co., Des Mo Iowa, contractor.

100 tons, factory building, Massey-Harris Racine, Wis.; Nelson & Co., Racine, tractor.

100 tons, addition, Club Aluminum Pro Co., Chicago.

100 tons, National Video Corp., Chicago.

PLATES . . .

PLATES PLACED

8320 tons, tanks, for Sinclair Refining Co various locations, awarded to unnamed makers.

2500 tons, H-piling second unit Seattle via to Bethlehem Pacific Coast Steel Corp. attle; Morrison-Knudsen Co. and Rum Co., Seattle, general contractors.

1800 tons, 3 tanks, California Refining Perth Amboy, N. J., to Bethlehem Co.

675 tons, tank, Hess Inc., Perth Amboy, to Bethlehem Steel Co.

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) tons, tank construction for Union Oil Co., Seattle, to Consolidated Western Steel Corp., Seattle.

5 tons, 3 tanks, Harbor Tank Shipping Co., West New York, N. J., to unknown fabricator.

PLATES PENDING

00 tons, (previously reported unstated) Bow Lake water supply line; bids soon to Seattle.

IPE . . .

CONTRACTS PLACED

5 tons, 1700 feet of 24 inch pipe, Westchester Lighting Co., Mt. Vernon, N. Y., to Republic Steel Corp., Cleveland.

0 tons, McKenzie water system project, Eugene, Oreg., to Pacific States Cast Iron Pipe Co., Provo, Utah.

STEEL PIPE PENDING

nstated, 9640 feet, 10 gage, 6 and 4 inch; bids to Olympic View water district, Sno-

AILS, CARS . . .

LOCOMOTIVES PLACED

cron, Canton & Youngstown, three 1600-hp diesel-electric road switchers, to Fairbanks, Morse & Co., Chicago.

icago & Northern Pacific, six 4-unit 6000-hp freight diesel-electric engines and three 1500-hp diesel-electric road switchers to Electro-Motive Division, General Motors Corp., LaGrange, Ill.

ew Orleans Public Belt railroad, two 800-hp diesel-electric switching locomotives, to Baldwin-Lima-Hamilton Corp., Philadelphia.

ew York, New Haven & Hartford, ten 2400-hp diesel-electric motors, to Fairbanks, Morse & Co., Chicago.

rfolk & Western, six heavy-duty freight locomotives to its Roanoke, Va., shops.

LOCOMOTIVES PENDING

ashville, Chattanooga & St. Louis, 21 diesel electric locomotives; bids asked. List includes ten 1500-hp road switchers, six 1500-hp road units and five 1200-hp switchers.

RAILROAD CARS PLACED

esapeake & Ohio, 4900 freight cars, awarded as follows: 2500 seventy-ton hoppers to American Car & Foundry Co., New York; 1000 fifty-ton box cars and 200 seventy-ton covered hopper cars to Pullman-Standard Car Mfg. Co., Chicago; 750 fifty-ton box cars and 200 seventy-ton low-side drop-end gondolas, to General American Transportation Corp., E. Chicago, Ind.; 250 seventy-ton flat cars to Greenville Steel Car Co., Greenville, Pa.

ord Motor Co., 119 seventy-ton gondolas, to Magor Car Corp., New York.

orfolk & Southern, 150 fifty-ton gondolas, to Magor Car Corp., New York.

orfolk & Western, 3500 freight cars with 3000 hoppers going to the company's shops at Roanoke, Va., and 500 box cars to the Birmingham, Ala., plant of Pullman-Standard Car Mfg. Co., Chicago.

FERROALLOYS

(*Continued from page* 123)

6%, C 4-6%). Add 1.1c to high-carbon ferro-rome prices.

ow-Carbon Ferrochrome: (Cr 67-72%.) Con-act, carload, lump, bulk, max. 0.03% C 3.60c per lb of contained Cr, 0.04% C 31.50c, 06% C 30.50c, 0.10% C 30.00c, 0.15% C 9.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% 29.00c, 1.50% C 28.85c, 2% C 28.75c. Car-ad packed add 1.1c, ton lot add 2.2c, less n add 3.9c. Delivered. Spot, add 0.25c.

ow-Carbon Ferrochrome, Nitrogen Bearing: dd 5c to 0.10% C low-carbon ferrochrome rices for approx. 0.75% N. add 5c for each 25% of N above 0.75%.

oundry Ferrochrome, High Carbon: (Cr 62-8%, C 5-7%). Contract, c.l. 8 M x D, bulk, 3.25c per lb of contained Cr, c.l., packed 5.15c, ton 25.50c, less ton 27.25c. Delivered oot, add 0.25c.

oundry Ferrochrome, Low Carbon: (Cr 50-4%, Si 28-32%, C 1.25% max.) Contract. arload, packed, 8 MxD, 16.35c per lb of loy; ton lot 17.2c; less ton lot, 18.4c, deliv-red; spot, add 0.25c.

ow-Carbon Ferrochrome Silicon: (Cr 34.41%,

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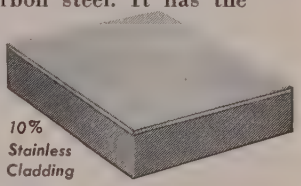

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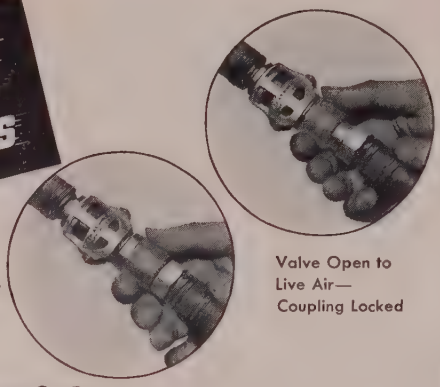
Quick-As-Wink AIR AND HYDRAULIC Control Valves



Valve Closed to Live Air— Open to Exhaust

Valve Open to Live Air— Coupling Locked

VALVE COUPLINGS ¼", ⅜", ½", & ¾" SIZES

For Economy and Safety

● These couplings permit air to be shut off and tools changed quickly without going to the main shut-off valve. Coupling jaws are automatically self-locking when valve is open to air supply. The coupling cannot be disconnected until the valve sleeve is moved to closed and exhaust position,—thus preventing accidents and injuries. Pressures to 250 p.s.i.—hose shank, male or female pipe connections. *Send for Bulletin No. 104-C. It gives full details and prices.*

THE HIGHER THE PRESSURE THE TIGHTER THE SEAL

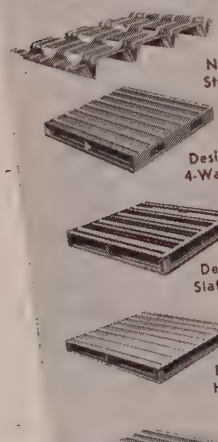
Quick-As-Wink AIR AND HYDRAULIC **Control Valves**

Hand, Foot, Cam, Pilot, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1926 East Pershing St., Salem, Ohio

ALL STEEL Pallet Headquarters

POWELL makes a COMPLETE line of Standard and Job Designed Pallets



Whatever your pallet needs . . . standard, four-way lift entry, slatted or solid bottom, reversible, Nesteel stacking or special designs for special jobs . . . your Powell representative is the man for you to see. If your require a special pallet ask your Powell representative about Powell Job-Designed materials handling equipment. Here Powell "know how" goes to work for you to design and build to the exact requirements of the job at surprisingly low cost. Whatever your pallet needs . . . Powell is the name to remember.

NOTE: Because of present conditions general order steel is in short supply. If you can furnish a D. O. Government Contract number with your order faster delivery is assured.

POWELL PRESSED STEEL

POWELL PRESSED STEEL CO. • HUBBARD, OHIO

ORIGINATORS OF COLD FORMED ALL STEEL HANDLING EQUIPMENT

In Greater Youngstown Dept. 321

Si 42-49%, C 0.05% max.) Contract, carlo lump, 4" x down and 2" x down, bulk, 21. per lb of contained chromium plus 12.4c pound of contained silicon; 1" x down, b 20.65c per pound of contained chromium p 11.50c per pound of contained silicon, F.c plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, 36-39%, Al 7-9%, C 0.05% max.) 21.75c per of contained silicon plus 12.4c per lb of c tained silicon plus aluminum, 3" x down, livered.

Chromium Metal: (Min. 97% Cr and 1% F Contract carload, 1" x D; packed, max 0.5 C grade, $1.08 per lb of contained chromiu ton lot $1.10, less ton $1.12. Delivered. S add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 W or more, $3.25 per lb of contained 2000 lb W to 10,000 lb W, $3.25; less th 2000 lb W, $3.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contr or spot, 1000 lb or more, $4.15 per lb of c tained W; less than 1000 lb W, $4.25.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lur bulk, 20.00c per lb of contained Si; pack 21.40c; ton lot 22.50c, f.o.b. Niagara Fal N. Y., freight not exceeding St. Louis r allowed.

50% Ferrosilicon: Contract, carload, lur bulk, 12.40c per lb of contained Si, carlo packed 14.0c, ton lot 15.45c, less ton 17. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.4 max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lur bulk, 14.3c per lb of contained Si, carlo packed 15.6c, ton lot 16.75c, less ton 18. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lur bulk 15.55c per lb of contained Si, carlo packed 16.8c, ton lot 17.8c, less ton 18.9 Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.5 max.) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lur bulk, 17.5c per lb of contained Si, carlo packed 18.7c, ton lot 19.65c, less ton 20 Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.5 max.) Add 0.7c to 90-95% ferrosilicon pric

Silicon Metal: (Min. 97% Si and 1% m Fe). C.l. lump, bulk, regular 20.0c per of Si, c.l. packed 21.2c, ton lot 22.1c, less 23.1c. Add 1.5c for max, 0.10% calci grade. Deduct 0.4c for max. 2% Fe gr analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% I Contract, basis f.o.b. Niagara Falls, N. lump, carload, bulk, 9.90c per lb of al ton lots packed 11.30c, 200 to 1999 lb 11. smaller lots 12.15c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3 each and containing exactly 2 lb of Cr). C tract, carload, bulk, 14.50c per lb of briq carload packed 15.2c, ton lot 16.0c, less 16.9c. Delivered. Add 0.25 for notching. S add 0.25c.

Ferromanganese Briquets: (Weighing app 3 lb and containing exactly 2 lb of M Contract, carload, bulk 10.95c per lb briquet, c.l. packaged 11.75c, ton lot 12. less ton 13.45c. Delivered. Add 0.25c notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing app 3½ lb and containing exactly 2 lb of Mn approx. ½ lb of Si). Contract, c.l. 11.15c, per lb of briquet, c.l. packed 11. ton lot 12.75c, less ton 13.65c. Delivered. 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing prox. 5 lb and containing exactly 2 lb of Contract, carload, bulk 6.95c per lb of bric c.l. packed 7.75c, ton lot 8.55c, less ton 9 Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and taining exactly 1 lb of Si). Carload, 7.1c, c.l. packed 7.9c, ton lot 8.7c, ton 9.6c. Delivered. Add 0.25c for notch small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ of Mo each) $1.14 per pound of Mo conta f.o.b. Langeloth, Pa.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25% 3.5% max., Si 4% max., C 0.10% m Contract, ton lots 2" x D. $1.50 per l contained Ti; less ton $1.55. (Ti 38-43% 8% max., Si 4% max., C 0.10% max.) lot $1.35, less ton $1.37, f.o.b. Niagara F N. Y., freight allowed to St. Louis, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18% 6-8%). Contract $177 per net ton, f.o.b.

gara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of altimore and St. Louis.

errotitanium, Medium-Carbon: (Ti 17-21%, C 4.5%.) Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. ouis rate allowed.

Calcium Alloys

alcium-Manganese-Silicon: (Ca 16-20%, Mn 4-18% and Si 53-59%). Contract, carload, ump, bulk 20.0c per lb of alloy, carload acked 20.8c, ton lot 22.3c, less ton 23.3c. elivered. Spot add 0.25c.

alcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 50-3%). Contract, carload, lump, bulk 19.0c er lb of alloy, carload packed 20.2c, ton ot 22.1c, less ton 23.6c. Delivered. Spot add .25c.

Vanadium Alloys

'errovanadium: Open-hearth Grade (Va 35-5%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $3.10 per lb of contained 'a. Delivered, Spot, add 10c. **Crucible-Special** rades (Va 35-55%, Si 2-3.5% max., C 0.5-% max.), $3.20. **Primos and High Speed** rades (Va 35-55%, Si 1.50% max., C 0.20% ax.) $3.30.

rainal: Vanadium Grainal No. 1, $1 per lb; o. 6, 68c; No. 79, 50c, freight allowed.

anadium Oxide: Contract, less carload lots 1.28 per lb contained V_2O_5, freight allowed. pot, add 5c.

Zirconium Alloys

-15% Zirconium Alloy: (Zr 12-15%, Si 30-3%, Fe 40-45%, C 0.20% max.). Contract, .1. lump, bulk 7.0c per lb of alloy, c.l. acked 7.75c, ton lot 8.5c, less ton 9.35c. elivered. Spot, add 0.25c.

5-40% Zirconium Alloy: (Zr 35-40%, Si 47-2%, Fe 8-12%, C 0.50% max.). Contract arload, lump, packed 20.25c per lb of alloy on lot 21c, less ton 22.25c. Freight allowed. pot, add 0.25c.

Boron Alloys

erroboron: (B 17.50% min., Si 1.50% max., l 0.50% max., C 0.50% max.). Contract, 00 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, dd 5c. F.o.b. Washington, Pa., prices 100 b and over are as follows: Grade A (10-4% B) 75c per pound; Grade B (14-18% B) 1.20; Grade C (19% min. B) $1.50.

orosil: (3 to 4% B, 40 to 45% Si), $5.25 per b contained B, delivered to destination.

ortam: (B 1.5-1.9%). Ton lots, 45c per lb; maller lots, 50c per lb.

arbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon errotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 56-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, delivered; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

7-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24%, P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth, $1.32; Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth $1.14, packed in bags containing 20 lb of molybdenum; Washington, Pa., 95.00c.

No. 16050 3 Inch
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protects valves, cylinders and spray nozzles

● Electric furnace cast steel housing. The strainer consists of machined and grooved bronze rings nested around a heavy slotted multi-ported bronze back-up cylinder. The rings can be loosened and cleaned easily with compressed air, or completely removed and cleaned in solvent. Repay their cost many times over. Widely used in steel mills and forging shops to prevent partial plugging of spray nozzles, resulting in rejects due to scale streaks. 1½" to 6" sizes. Send for Data Sheet No. 3402. It gives full details.

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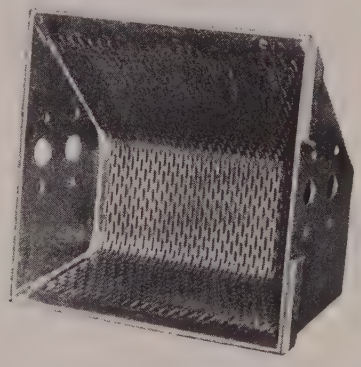
AIR AND HYDRAULIC
Control Valves

Hand, Foot, Cam, Pilot, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1925 East Pershing St., Salem, Ohio

Typical of Hendrick's **Manufacturing Facilities**



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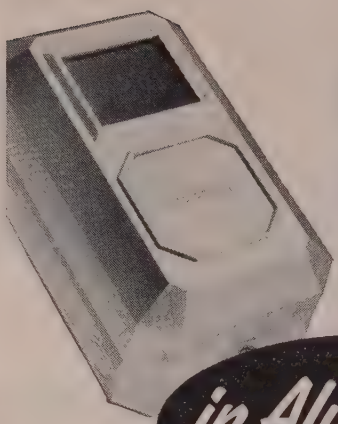

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Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

California

atrobe Electric Steel Co., Latrobe, Pa., moved its Los ngeles office to 3537 E. Olympic Blvd., that city. C. W. arnthouse, district manager, is in charge of the en- rged office and warehouse staff. He is assisted by Carl . Barnthouse Jr., sales and service representative, who rmerly was located at the plant in Latrobe.

California

ellows Co., Akron, O., manufacturer of industrial pneu- atic devices, established West Coast regional headquar- rs at 733 E. Pico Blvd., Los Angeles. George Cook is e West Coast regional manager. The company also is king over all distribution sales activities for Smith- hnson Corp., Los Angeles, manufacturer of Senacon eumatic equipment.

California

hnson Corp., Three Rivers, Mich., appointed Guy L. arden & Sons as its representative in all of California nd part of Oregon. Formerly this agency was repre- ntative for Johnson in lower California. Johnson Corp. anufactures steam specialties and boiler room equip- ent.

Delaware

tlantic-Eastern Steel Corp. filed a charter of incorpora- on with the secretary of state's office, Dover, Del. apital of the firm is listed at $2.5 million. Corporation uarantee & Trust Co., Wilmington, Del., is serving as e principal office.

Delaware

irchoefer Farm Supply Inc.—farm machinery—was hartered by the secretary of state's office, Dover, Del. apital of the firm is listed at $50,000. U. S. Corpora- on Co., Dover, is serving as the principal office.

Delaware

ee Corp.—machinery—was chartered by the secretary f state's office, Dover, Del. Arthur B. Carr, Wilming- on, Del., is serving as the resident agent.

Delaware

letron Inc.—steel products—was chartered by the sec- tary of state's office, Dover, Del. Metron Steel Corp.— eel products—also has been chartered. Corporation ervice Co., Delaware Trust Bldg., Wilmington, Del., is erving as the principal office.

Illinois

aterpillar Tractor Co., Peoria, Ill., established an addi- ional administrative sales division. The new Plains Di- ision is made up of territory formerly under the Central ivision which will take over part of the Eastern Di- ision. Engines sales department is operating as the ndustrial Division of the general sales department. The ales Training Division suspended organized sales train- ng classes.

Iowa

exter Co., Fairfield, Iowa, manufacturer of clothes wash- ng machinery and castings, awarded a contract to W. A. attson, Burlington, Iowa, for an addition to its plant. stimated cost is $150,000.

Kentucky

lectric Energy Inc. increased the projected size of the ower plant it plans to build at Paducah, Ky., to supply ne government's planned atomic energy plant. Esti- ated cost ranges up to $88 million instead of a previous stimate of $73 million. The power company was formed y Union Electric Co. of Missouri, Middle South Utilities nc., Central Illinois Public Service Co., Illinois Power Co. nd Kentucky Utilities Co.

New Jersey

. G. Frantz Co. Inc. transferred its sales and manufac- uring facilities from New York to a recently built plant n the outskirts of Trenton, N. J. The company makes agnetic separators and filters.

New Jersey

oseph T. Ryerson & Son Inc., Chicago, is appointed ex- usive warehouse distributor of Rockrite tubing manu- actured by **Tube Reducing Corp.,** Wallington, N. J.

New York

arborundum Co., Niagara Falls, N. Y., established a mar- eting department under the direction of Frederick T. eeler. The department brings together all related staff unctions of marketing, including market research, ad- ertising, sales promotion, and public relations. Mr. eeler is director of marketing; Arthur Batts Jr., mana-

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The Cutting Lubricant that reduces costs & increases profits!

INCREASES SAW LIFE AND OUTPUT

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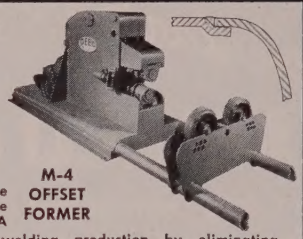
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New York

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Ohio

uriron Co. Inc., Dayton, O., plans to erect a $400,000 ffice building. The company specializes in acid resisting alloys and chemical plant equipment.

Ohio

incinnati Milling Machine Co., Cincinnati, plans to build ldditions to its foundry and No. 2 machine shop. Estiated cost is $440,000.

Ohio

rms Industries Co., Youngstown, purchased a plant at olumbiana, O., and will start production of defense items the near future.

Pennsylvania

Villard Storage Battery Co., Cleveland, will build a plant Allentown, Pa., that will cost an estimated $2 million, including equipment.

Pennsylvania

ibrico Jointless Firebrick Co., Chicago, appointed Stanly F. Heller & Son, Stroudsburg, Pa., as its distributor northeastern Pennsylvania.

Texas

leco Division, Reed Roller Bit Co., Houston, appointed ontes y Valles, S.A., Vallarta 1, 305B, Mexico 4, D. F., distributor of Cleco products in that area. The Cleco ne includes pneumatic tools for construction, manufacuring, metal fabrication, foundries, industrial maintenance and stone carving.

Wisconsin

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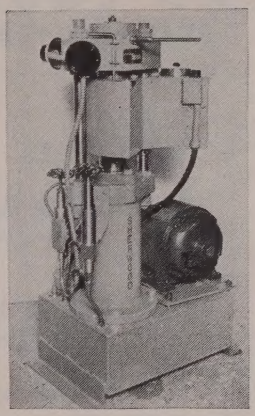

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